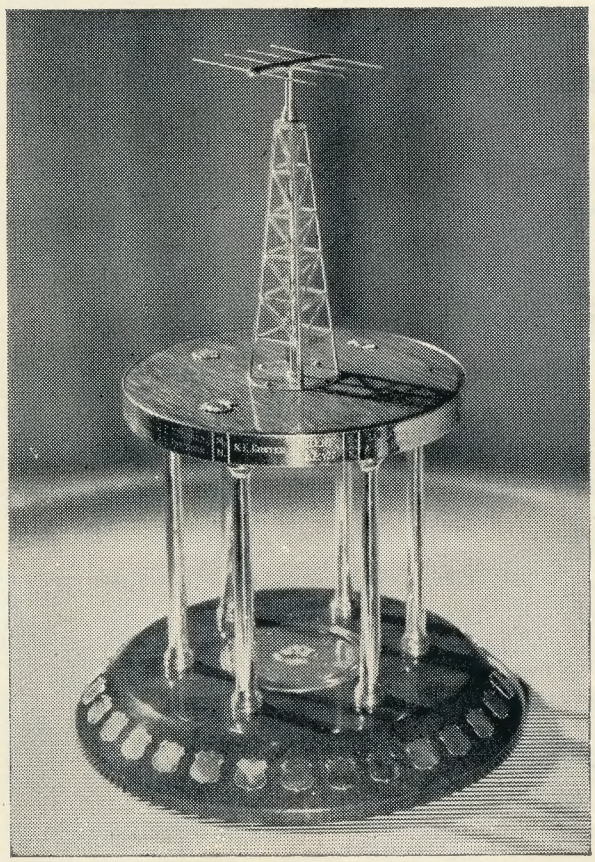
Amateur Radio



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Vol. 33
No. 8

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MR2P	37/6

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MR1P 1 m/a. 32/6

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MR3P	500uA.DC 55/-	MR3P	100Ma.DC 47/6
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MO65	20Ma.DC 35/-	MO65	1Amp.DC 35/-
MO65	50Ma.DC 35/-	MO65	30-0-30 Amp. D.C. 42/6
MO65	100Ma.DC 35/-		
MO65	150Ma.DC 35/-	MO65	50 mV DC 37/6
MO65	250Ma.DC 35/-	MO65	100 m DC 37/6

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MR52	500uA.DC 47/6	MR52	50Ma.DC £2
MR52	1Ma.DC £2	MR52	100Ma.DC £2
MR52	5Ma.DC £2	MR52	250Ma.DC £2
MR52	10Ma.DC £2	MR52	500Ma.DC £2
MR52	25Ma.DC £2		

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"AMATEUR RADIO"

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OUR COVER

Featured on the front cover is the Remembrance Day Trophy, Contest for which takes place on the 14th and 15th of this month.

FEDERAL COMMENT

★

THE GATHERING STORM

A statement in a recent paper by the Radio Society of Great Britain read as follows: "It must be shown to all other users at the next I.T.U. Conference that Amateur Radio movement is thoroughly conversant with modern practice and that its equipment and operating procedure conform to exceed the best commercial practice, **and that it is in the public interest to have frequencies available for Amateur operation.**" The bold type is ours, but the complete comment reflects the concern of all countries at the increasing demand for frequencies.

Developing countries, to keep pace with the world, must have communications; industrialised nations need more space in the limited frequency spectrum. Amateur Radio therefore will have to justify its existence on more than the extended arguments of the last I.T.U. Conference, and in fact it is now agreed that more than the presence of observers and lobbying during the talks will be needed to win the case.

Therefore, we must commence to think about our use of the frequency bands, how we can serve the world, and of what value we are. As an indication of the concern felt by the A.R.R.L., and the necessity to upgrade the Amateur Service, we should look closely at the policies surrounding the proposed introduction of incentive licensing in the U.S.A. Whilst these proposals will help reduce congestion on the heavily populated bands, the real intentions are, to use A.R.R.L.'s own words, "for more effective use of the Amateur frequencies, for increased Amateur technical proficiency, for more effective performance in the public interest, convenience and necessity."

The Wireless Institute of Australia is not unmindful of these problems and it could well be that the trend of Amateur Radio, even in this country, is moving away from the attainable and desirable goals of the A.R.R.L. programme.

May this Executive suggest that we all consider our own attitudes to Amateur Radio in the light of the A.R.R.L. and R.S.G.B. words, and to decide whether **their** deeper appreciation is possible or desirable in Australia?

We must remember to consider the Amateur in the World rather than merely the Amateur in Australia because this hobby, more than any other, depends upon international co-operation. To help decide our attitude we must answer these questions also posed by the I.A.R.U.:

1. Why have we Amateur Radio?
2. What purpose does it serve?
3. Can its usefulness be extended?
4. How can our Amateur Service continue to operate and expand in a world which is changing politically, economically, and technically?

Upon these answers will depend our ability to ensure the future of our hobby.

Peter D. Williams, Federal Secretary, W.I.A.

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TRANSISTORISED 432 Mc. CONVERTER

C. B. EDMONDS,* VK3AEE

IN the quest for a low noise r.f. amplifier for use on 432 Mc. the author's attention was attracted to the ever-increasing use of transistors in u.h.f. t.v. Eventually an AFY16/AF139 was obtained and tried with very gratifying results. This in turn led to a complete converter using transistors.

Comparing valves with transistors makes it obvious that transistors compare more than favourably with any but the more expensive valves, and these have the disadvantage of a comparatively short top performance life.

Valve	Transistor	Probable N.F.
E88C		7.5 db.
6AM4		10 db.
A2521		6.5 db.
7077		4.5 db.
416		4 db.
	AFY16/AF139	4 db.
	2N2398	5.5 db.
	AF186	5.5 db.

The converter makes use of AFY16/AF139 as r.f. stage mixer and final multiplier in the oscillator chain. The other transistors in the oscillator chain are OC171 or AF114N. All of the transistors are p.n.p. The oscillator chain could also use 2N706 transistors but this would require an additional battery to supply 12v. for the n.p.n. 2N706's.

Referring to the circuit diagram the oscillator is a 3rd overtone circuit giving output at 23.1 Mc. The collector circuit is tuned to this frequency and the feedback is adjusted by the ratio of C1/C2 so that the oscillator only operates over a narrow range of tuned circuit, about resonance. Increasing the value of C2 will decrease the feedback, and decreasing the value of C2 will increase the feedback. The exact values of C1/C2 will depend upon the loaded Q of the collector circuit and the activity of the crystal.

With the values shown for the biasing this stage will draw a collector current of 4 mA.

The next stage is a tripler to 69.3 Mc. operating in class C, the collector circuit being tuned to this frequency. The drive to the base is taken via a low impedance link coupled to the cold end of the oscillator tank. The value of emitter resistor is chosen to fulfil two functions:

(a) To adjust the collector current within safe limits according to the drive available from the previous stage.
(b) To adjust the drive available to the next stage.

A collector current of 2 mA. was found to be adequate.

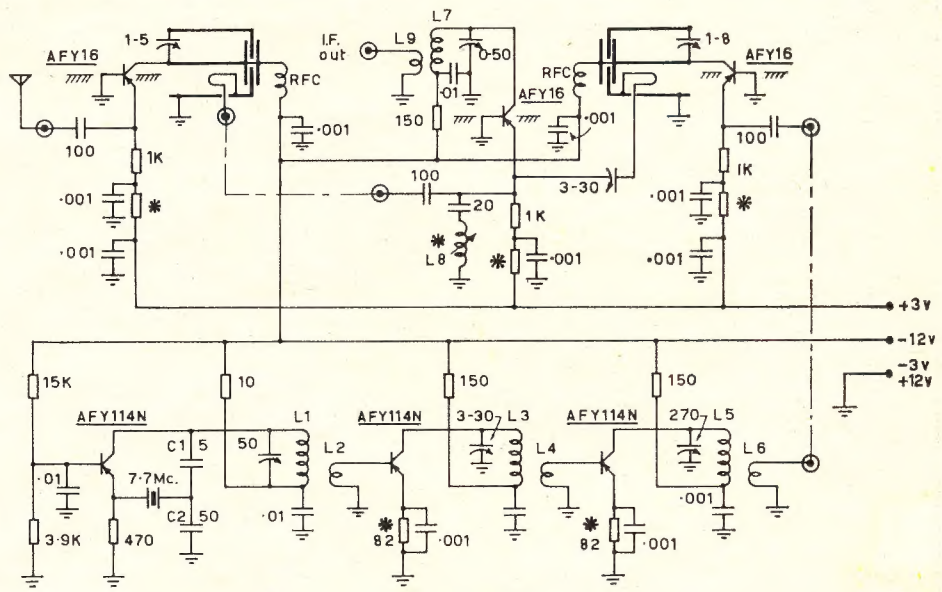
The next stage is a doubler to 138.6 Mc. and the collector circuit is tuned to this frequency. The same biasing considerations apply to the emitter resistor as in the previous stage.

* 12 Acacia Street, Glenroy, Vic.

The output of this stage is link coupled via a short piece of co-axial to the tripler AFY16/AF139 which gives output at 415.8 Mc. to drive the mixer.

The u.h.f. tripler is built into a cavity which forms the collector tuned circuit (a trough could be used if more convenient). The collector is series fed and the transistor is mounted in a shield with the base and housing leads earthed directly to this shield. The 138.6 Mc. signal is fed via a d.c. blocking capacitor directly to the collector which is connected to the emitter and completely screened from centre conductor of the cavity.

The load for the emitter is a 1K ohm resistor which is taken to positive 3 volts via a second resistor, the value of which is chosen to adjust the collector current to the desired value.



TRANSISTORISED 432 Mc CONVERTER

Components with * see text.
L1—12 turns ¼ in. diam. close wound, with irondust core.
L2—Two turns close coupled, cold end L1.
L3—Six turns 18 s.w.g., ¼ in. diam. ½ in. long.
L4—One turn close coupled cold end L3.
L5—Six turns 18 s.w.g., ¼ in. diam, ⅝ in. long.
L6—One turn close coupled cold end L5.
L7, L8, L9—To suit i.f. frequency. Five turns close coupled cold end L7.
R.F.C.—1 in. long, 24 s.w.g. enamelled, close wound, ⅛ in. diam.

Best tripling action was obtained with a collector current of 0.75 mA. and in most cases should not exceed 1.5 mA.

The cavity is a short circuit (to r.f. only) quarter wave and the 415.8 Mc. is taken via a low impedance link to the emitter of the mixer. The d.c. blocking condenser in this link is made variable so that the link can be tuned away from series resonance at 432 Mc.

The r.f. stage, which is also an AFY16/AF139, is in a grounded base unneutralised circuit and uses an identical cavity to the tripler. The signal is connected to the emitter which has an input resistance of approx. 75 ohms. The emitter load is a 1K ohm resistor and the second resistor is chosen to give a collector current of 1.5 mA., this being the optimum value for best noise figure.

The output of the r.f. stage is link coupled via a d.c. blocking condenser to the emitter of the mixer.

The emitter load of the mixer is a 1K ohm resistor and the second resistor is chosen to adjust the collector current for the best mixer action, in this case 1.25 mA.

The collector load of the mixer is a tunable tuned circuit at the i.f. frequency of, in this case, 16.5 Mc. upwards. The circuit is not broadbanded but peaked for the portion of the band required. The output of the i.f. is taken via a low impedance link to the main receiver.

The mixer transistor is mounted in a hole in the shielding partition between the tripler and i.f. output circuit, with its housing and base leads directly earthed.

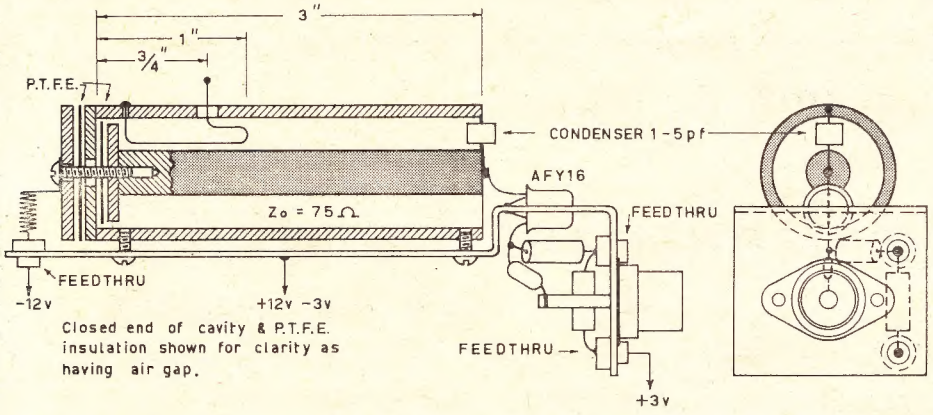
To satisfy the requirement of a low impedance, to i.f. frequencies, between base and emitter a series tuned circuit resonated to 17.5 Mc. is connected between emitter and ground. (This is an essential for efficient mixing.)

Care must be exercised when soldering the transistors in circuit to protect them from excessive heat. Therefore, the metal surfaces are firstly thoroughly tinned and then, with the transistor in position, a very quick touch with the soldering iron is sufficient.

The cavities consist of an outer conductor made of 1" diam. brass or copper tube with a blanking disc at one end. The inner conductor is made of ⅜" diam. rod with a disc at one end, the disc being of diameter ⅛" less than the inside diameter of the outer conductor. In addition, a further disc is required of 1" diameter.

The output coupling loop is 1" long and shorted to the outer conductor as close as practicable to the condenser, the other end coming through a ¼" hole in the side wall of the outer conductor.

The cavities are tuned by means of a suitable (miniature trimmer) condenser connected between inner and outer at the open end. This assembly is then mounted on a piece of sheet brass or copper which is bent so as to screen input and output circuits when the transistor is mounted. (See diagrams.)



CAVITY AND MOUNTING BRACKET SHIELD

The inner conductor is drilled and tapped at the disc end and the outer conductor blanking disc is drilled in the centre to give at least 1-16" all round clearance of the bolt. The additional disc, which is drilled in the centre to give clearance for the bolt, is then clamped to the inner conductor through the hole in the outer conductor; p.t.f.e. or polystyrene sheet of .005" having been placed between both discs and outer conductor.

This then forms a two dielectric condenser with the outside disc and inner conductor disc as one electrode, the outer conductor as the other electrode and the p.t.f.e. sheet as the dielectric.

The usual precaution of shortest possible leads is most important when dealing with 432 Mc.

ADJUSTMENTS

It was found to be impossible to grid dip the tuned circuits with the transistors connected, however, grid dipping before the transistor was connected did give enough drive for final peaking after the transistor was connected. This can be done stage by stage from the oscillator whilst selecting the correct value of emitter resistor, or metering the collector current of the succeeding stage, which should be very small in the absence of drive. The series tuned trap should be set to frequency before connecting it in circuit and thereafter should not be touched.

The mixer transistor will give increased noise at the i.f. frequency (with the collector tuned) in the absence of output, or insufficient output from the 138 or 415 tripler, and this can be used as a tuning indication, should an r.f. indicating voltmeter not be available.

The r.f. cavity should resonate with 5 pF. total capacity and can be tuned on noise. If two peaks of noise are heard choose the higher frequency peak. One r.f. stage is sufficient although the author will be using a second r.f. stage as a masthead amplifier. The converter gives a noise figure of 4 db. which is measured on a suitable noise generator rated to 1,000 Mc. and of commercial origin. ●

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. New members and those whose totals have been amended will also be shown.

PHONE

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK5MS	24	316	VK2ADE	65	231
VK5AB	45	312	VK2JZ	61	229
VK6RU	2	307	VK6KW	4	211
VK6MK	43	304	VK3WL	14	211
VK3AHO	51	300	VK4HR	12	208
VK4FJ	21	283	VK3ATN	26	204

C.W.

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK3KB	10	330	VK2AGH	71	274
VK3CX	26	306	VK6RU	18	262
VK2QL	5	305	VK2EO	2	260
VK4FJ	29	300	VK3AHQ	79	260
VK2ADE	81	298	VK3ARX	66	250
VK3NC	19	286	VK3YL	39	240

Amendment:
VK3RJ 42 228

OPEN

Call	Cer. No.	C'nt-ries	Call	Cer. No.	C'nt-ries
VK2ADE	28	322	VK2ACX	6	300
VK6RU	8	312	VK3NC	77	287
VK4FJ	32	308	VK3JA	43	271
VK6MK	74	306	VK4HR	7	254
VK2AGH	83	305	VK2VN	18	247
VK3AHO	76	304	VK7LZ	23	242

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V.h.f. Field Strength Meter and Fox Hunt Sniffer

When "Fox Hunting" and testing your v.h.f. (6 and 2 metre) transmitter a reliable but simple instrument is required.

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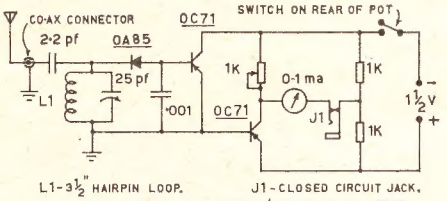
We used it recently at two field days, and with remarkable success. Its range is, on a 15 watt transmitter in a 3-element Gamma matched antenna, about one quarter of a mile. You don't believe it? Ask Norm VK2QA (if you can hear him on the air). Our antenna on the sniffer was a quarter wave whip plugged straight into the aerial socket. When a 3-element beam was substituted the directivity was improved and slightly greater range obtained.



V.H.F. FIELD STRENGTH METER/FOX HUNT SNIFFER

We shunted the meter with a 1 ohm shunt, capable of being switched in and out, so as to lessen the sentitivity of the meter at close proximity to the fox.

My thanks go to Norm Durham (VK2QA), who supplied the necessary receiver.

Incidentally, a signal generator will not work—not mine anyway—it is not powerful enough.

—David Priestley.

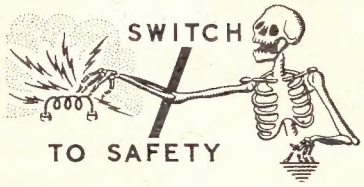
SOME THOUGHTS ON THE FOX HUNT SNIFFER

There may be blokes who will be way ahead of me with these brainwaves; but, without actually trying it, I think David Priestley's nice little gadget would make a fine outboard "S" meter by plugging in a suitable i.f. trannie in lieu of the hair-pin loop and coupling to the rx by a gimmick condenser.

Alternatively one could possibly hook up to the a.v.c. line and do without the transformer, but this might load the line too much.

A further thought is that the circuit could be adapted to use in a solid state receiver to supply both "S" meter and amplified a.v.c.

—Ken Gillespie, VK3GK.



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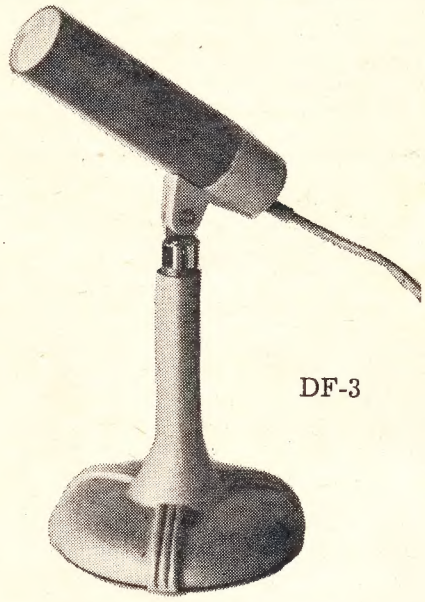

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Silicon Replacement of Tube Rectifiers*

SOME NECESSARY PRECAUTIONS

G. L. COUNTRYMAN, W4JA

● Silicon diodes can be used to advantage in the power-supply circuits of existing equipment, as well as in new construction. This article discusses some of the precautions that should be taken to ensure trouble-free operation.

TUBE manufacturers won't like to read this, but the vacuum-tube rectifier is about to go the way of the coherer. Those who still use tubes for new design, or for replacement are, in most cases, wasting money, losing some high voltage and shortening the life, or reducing the stability, of other components by the generation of unnecessary heat. Furthermore, silicon-diode rectifiers virtually will last indefinitely, provided certain precautions are taken. This article is an attempt to accumulate in one place for easy reference the procedures necessary in using semi-conductor diodes, some simple methods of construction, and sources of inexpensive components.

Let us start with a relatively insignificant item. The 6X4 bias rectifier in the author's Navigator required replacement. Was another 6X4 purchased? Not on your life! A Vector P7D 7-prong plug with an aluminium shell was obtained, and one 400-p.i.v. 600-mA. silicon diode was wired inside it. Burstein-Applebee sell these diodes for 59 cents, their No. 18C44. Barry's new catalogue lists a similar rectifier, 600 p.i.v. 750 mA. for only 39 cents.

Next, it was decided to replace the 5U4GB high-voltage rectifier tube in the Navigator. Diodes could have been wired into an octal base for plug-in replacement, but it seemed simpler to obtain an octal-base 1800-p.i.v. 700-mA. unit from Barry's for $3.10. An unexpected dividend resulted from this operation. With no other changes, the increase in high voltage enabled the Navigator to drive a 500-watt triode amplifier to full output, Class C, on all bands.[1]

SELECTING DIODES

In selecting silicon diodes for a particular application, there are five important ratings that must be observed. These ratings are:

(1) Peak-inverse (or peak-reverse) voltage.
(2) Peak recurrent current.
(3) Surge current.
(4) Average forward current.
(5) Operating temperature.

P.I.V.

The p.i.v. (or p.r.v.) is the peak value of the reverse voltage that appears across the diode on the nonconducting portion of the cycle. In both the centre-tap and bridge full-wave rectifier circuits, the p.i.v. across each diode (or each string of diodes in the case of diodes in series) is approximately 1.4 times the entire transformer r.m.s. secondary voltage. Most diode manufacturers recommend a safety factor of at least 1.5 (with suitable precautions to suppress transients), so the diode you select should have a p.i.v. rating of at least twice the total transformer r.m.s. voltage measured at minimum load on the supply.

PEAK DIODE CURRENT

The peak recurrent current is the peak value of the rectified current wave passed by the diode. With a choke-input filter having a choke of at least "critical" inductance value (L_h=full load output voltage/maximum load current in mA.) the peak value will be limited to about twice the D.C. current drawn from the supply. With a choke of less than critical value, or with a capacitor-input filter, the peak-current value may be several times the D.C. load current. Although the peak-current ratings of silicon diodes are at least twice as great as comparable tube rectifiers, most diode manufacturers place a lower load-current rating on their diodes when a capacitor-input filter is used—about 75 per cent. of the rated load current for choke input.

MAXIMUM SURGE CURRENT

Maximum surge current is the peak nonrepetitive current for a single cycle. In normal Amateur operation, it is related principally to the charging current to a capacitor-input filter at the instant the supply is turned on. Although this rating is in terms of several amperes for even small silicon diodes, a limiting resistance of 5 to 10 ohms in series with the diode is recommended. In most Amateur supplies, however the resistance and leakage reactance of the transformer will supply more than this value, so an external resistor may be required in only very low-voltage supplies where the transformer impedance is unusually low.

The large peak- and surge-current ratings of silicon diodes permit the use of sufficient capacitance in a capacitor-input filter to provide at least as good voltage regulation as that normally obtained with a choke-input filter. Thus, advantage may be taken of the approximately 50 per cent. increase in output voltage provided by the capacitor-input filter in cases where the higher voltage is desirable.

MAXIMUM LOAD CURRENT AND OPERATING TEMPERATURE

The maximum average forward current is the maximum D.C. load current that should be drawn from the supply. A temperature restriction is attached to this rating. Most of the silicon units suitable for Amateur transmitter plate supplies are of the type designed to be mounted by their wire terminal leads. For these types, ambient temperatures (temperature of the air surrounding the unit) are specified. (The temperature of stud-mounted units is usually referred to the stud or case.) Maximum rated temperatures vary from about 25 degrees C. (77 degrees F.) to 100 degrees C. (212 degrees F.) It is obvious that unusual precautions are necessary when units rated for the low end of the temperature range are to be used. The most practical measure for an Amateur to take would be to derate the unit according to curves supplied by the manufacturer. However, on the average, the difference in price between low-temperature units and those rated for higher temperatures is negligible, so there is no point in using low-temperature units for most Amateur applications. But keep the temperature restriction in mind when selecting a diode; temperature restrictions are often not specified for "bargain" diodes.

Regardless of the temperature rating, silicon diodes should be mounted well away from heat-generating components, and placed so that they will be well ventilated, using a fan or blower, when necessary, to keep the ambient within rating.

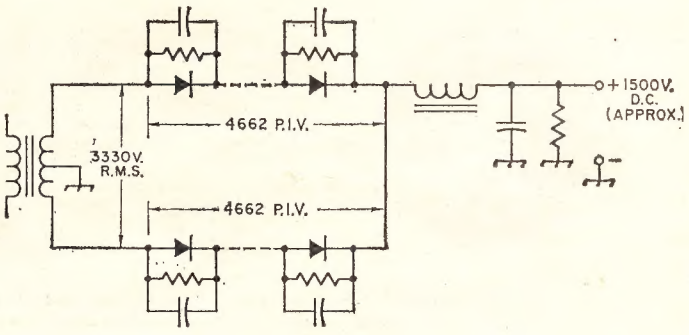

Fig. 1. Typical centre-tap full-wave circuit showing voltage-equalising resistors and transient - suppressing capacitors across each diode in the series strings. The resistors are each about 470K, ½ watt. The capacitors are 0.01 μF. 1000-volt disc ceramics. See text for diode ratings

* Reprinted from "QST," January, 1965.

[1] A certain amount of caution should be used in making such substitutions, since some components may not be able to take the increase in voltage.

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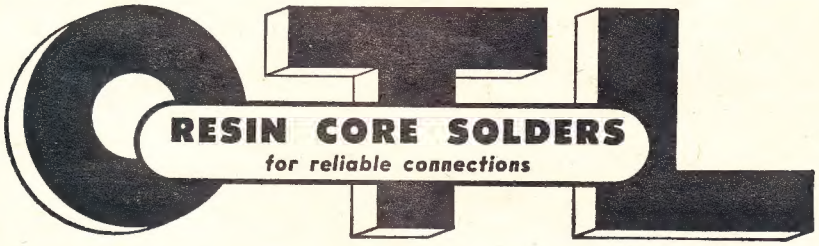

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DIODES IN SERIES

The back resistances of diodes, even of the same type, are not uniform, so a reverse voltage across units in a series will not divide evenly. The voltage distribution can be equalised by connecting a resistor across each diode. The resistance value should be low compared to the back resistance of the diode; values of 100K to 500K are commonly used.

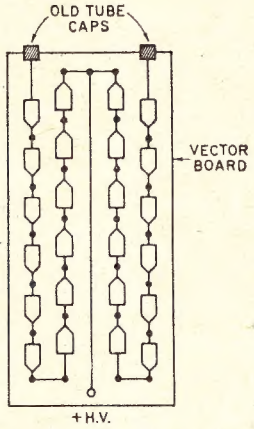


Fig. 2. Sketch showing diodes mounted on a perforated board for plug-in use. The shunting resistors and capacitors are mounted on the reverse side of the board. Further details will be found in the text.

TRANSIENTS

Various high transient voltages are developed in power supplies, in normal operation as well as when switching. These have much more serious consequences for silicon diodes than for tube rectifiers. The most violent transients occur when switching the power supply off, particularly when a choke-input filter is used. It is essential that measures be taken to attenuate these transients to avoid permanent damage to the diodes, particularly when several diodes are used in series to accumulate the necessary p.i.v. rating. (Silicon diodes do not open up when they fail; they short out, placing the total voltage across fewer diodes. The result is that when one diode goes, the rest in the string follow suit.) A capacitor connected across each diode unit will take care of most transients. Disc capacitors of 0.01μF. with 1000-volt ratings are usually adequate.

When a choke-input filter is used, a transient-suppressor across the choke is good insurance. This consists of a capacitor and resistor in series across the choke. The capacitor should have a value of not less than

$$C\mu F. = \frac{LI^2 \times 10^5}{4E^2}$$

where L is the inductance of the choke in henrys at minimum load, E is the D.C. output voltage of the supply, and I

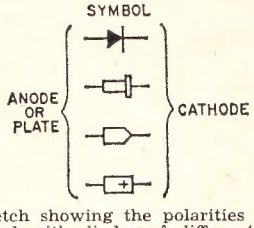


Fig. 3. Sketch showing the polarities commonly associated with diodes of different types.

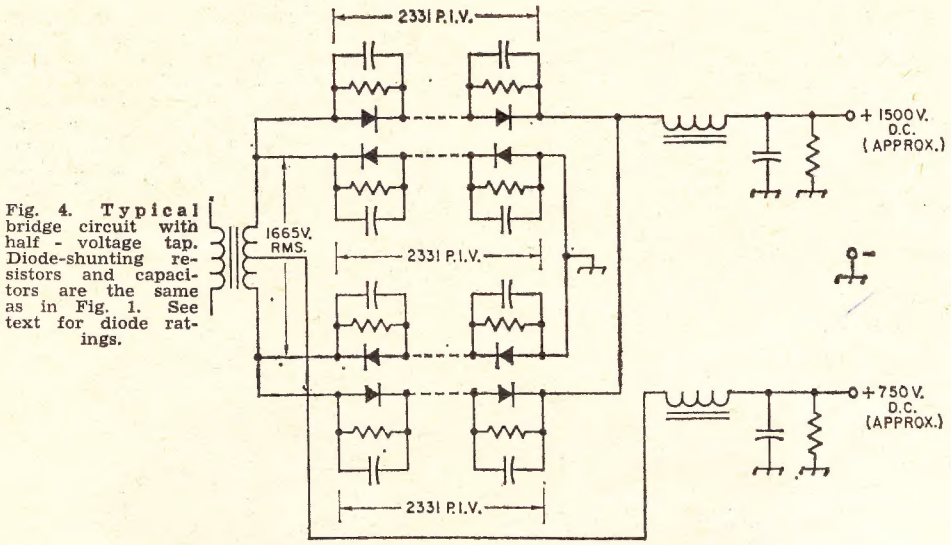


Fig. 4. Typical bridge circuit with half - voltage tap. Diode-shunting resistors and capacitors are the same as in Fig. 1. See text for diode ratings.

is the maximum D.C. current drawn from the supply. The resistor should have a value not greater than E/I.

It should perhaps be pointed out that the higher the p.i.v. rating of the diode used, the less susceptible it will be to damage from transients. Therefore, where the difference in price is not too great, the diode with the higher p.i.v. rating should be chosen (or the number of diodes in series increased).

CIRCUITS AND CONSTRUCTION

Fig. 1 shows a typical centre-tap full-wave circuit. The total transformer-secondary r.m.s. voltage is 3330 at minimum load. (The minimum-load voltage should be used in estimating p.i.v. ratings.) The p.i.v. across each rectifier string is therefore 1.4 × 3330 = 4662 volts. If the recommended 50 per cent. safety factor is provided, the p.i.v. rating of each rectifier string will

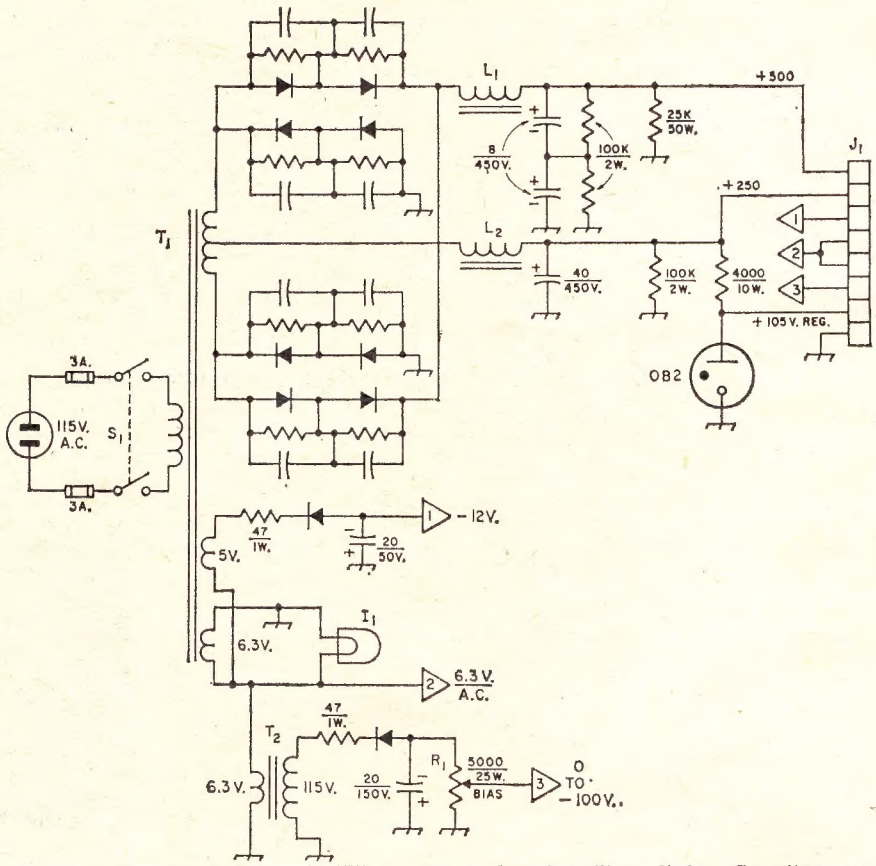


Fig. 5. Circuit diagram of a general utility power supply using silicon diodes. Capacitances are in μF., and resistances are in ohms (K equals 1000). Capacitors with polarity markings are electrolytic; others are 0.01-μF. 1000-volt disc ceramic. Unmarked resistors are 330K, ½ watt. All diodes are 700-p.i.v. 750-mA. silicon (see text).

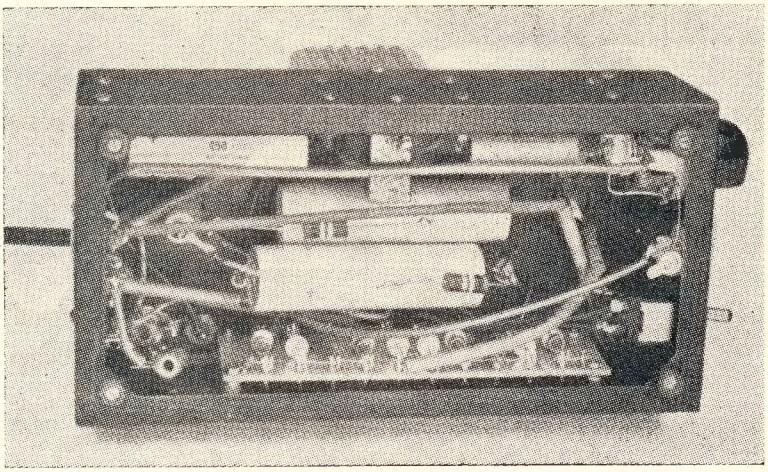
I1—6.3-volt panel lamp.
J1—Octal tube socket.
L1, L2—Filter choke (see text).
S1—D.p.s.t. toggle switch.
T1—Power transformer; 600 volts, r.m.s., centre-tapped; 5 volts, 3 amp.; 6.3 volts, 9 amp. See text.
T2—6.3 volt 1-amp. filament transformer used as step-up transformer.

be 4662 × 1.5 = 6993 volts. To accumulate this p.i.v. rating it will be necessary to use a minimum of 9 diodes with a p.i.v. rating of 800 volts each, 12 diodes rated at 600 p.i.v., 14 rated at 500 p.i.v., or 18 rated at 400 p.i.v. in each of the two strings. The current rating of the diodes should be at least half of the maximum D.C. current to be drawn from the supply, with derating according to the manufacturer's curves if the units are to be operated above rated ambient temperatures.

A typical bridge circuit is shown in Fig. 4. The p.i.v. across each of the four rectifier legs is 1665 (no-load r.m.s. value) × 1.4 = 2331 volts. Adding the 50 per cent. safety factor brings the total p.i.v. rating for each leg of the bridge to 3496 volts. This will require at least 5 diodes rated at 800 p.i.v., 6 rated at 600 p.i.v., 7 rated at 500 p.i.v., or 9 rated at 400 p.i.v. in each of the four legs.

With an input choke of at least critical inductance, the D.C. output voltage from this circuit will be appoximately 90 per cent. of the total transformer r.m.s. voltage (measured at full load), minus the D.C. drop across the choke. Half voltage may be obtained from the centre tap, as shown.

The current rating of the diodes should again be at least half of the maximum D.C. current to be drawn from the supply. This must include the current drawn from the low-voltage tap if it is used.



Bottom view of the general utility supply. Diodes are mounted on a perforated board attached to one side of the chassis. Shunting resistors and capacitors are on the opposite side of the board. The power-input cord emerges from a grommeted hole in the left-hand end of the chassis.

If the choke has at least critical inductance, the output voltage will be approximately 45 per cent. of the total secondary r.m.s. voltage (measured at full load) minus the voltage drop across the D.C. resistance of the choke.

The high-voltage supply in most transmitters uses this circuit with 886s or 3B28 tubes. For direct replacement, a plug-in unit can be made up. This may take the form of a strip of Vector board (0.093-inch holes on 0.265-inch centres) with Vector T9.4 push-in terminals to hold the diodes, resistors and capacitors. If two plate caps, removed from defunct tubes, are attached to the top end of the board, as shown in Fig. 2, the original cap connectors may be used in making connections to the transformer. A pair of 4-pin tube bases can be attached to the bottom of the board with a spacing to fit the original rectifier sockets in the equipment. The diode leads are soldered to the push-in connectors on one side of the board, and the resistors and capacitors to the same terminals on the opposite side of the board. If the plug-in unit is not desired, the board can be mounted on stand-off insulators. Wiring is simplified because no filament connections are needed.

At times there may be confusion as to which terminal of a silicon diode is the anode, and which is the cathode. Refer to Fig. 3, which shows the designs most commonly used. Particularly in the case of surplus diodes, which often bear no markings, this information will be useful.

A GENERAL UTILITY SUPPLY

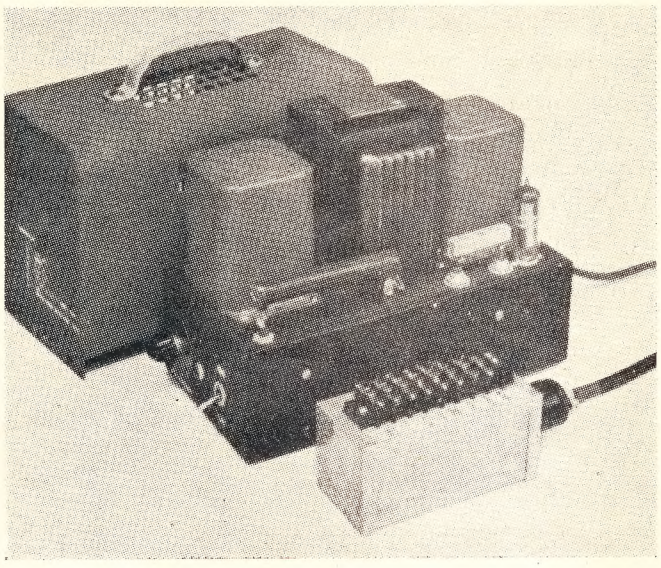
The photographs show a power supply designed by the author to power an auxiliary 80-watt transmitter and also to be available in the shack for experimenting and testing. Requirements were somewhat unusual, the voltages needed being 500, 250 and regulated 105 volts positive, a fixed negative voltage variable from 0 to 100, and 6.3 volts A.C. at 7 amperes. Fig. 5 shows how this is accomplished.

A bridge circuit with a half-voltage tap provides the positive voltages. The transformer is a husky Burstein-Applebee No. 3A118 costing $7.99. If you should require higher output voltages, B-A No. 13A162 will provide 750 and 375 volts at the same price. The diodes are "tophat" 750-mA. 700-p.i.v. units (B-A No. 18B195) selling for 59 cents each. While you are making out your order, pick up a few of their No. 18A73 feedthroughs at only 19 cents each. They are excellent for r.f. use and up to 1500 volts D.C. They fit into a $\frac{3}{8}$-inch hole.

The filter chokes are bargain items from World Radio Laboratories costing only 89 cents each. They were manufactured for Collins and are rated at 8 henrys, 100 mA. However, experience has shown that they will carry a considerably large current. At around 350 mA., the inductance is reduced considerably, but is adequate for sufficient smoothing.

The supply is constructed on a Premier AF510 amplifier foundation having a 5 × 10 × 3-inch chassis and a cover 6 inches high. Rubber feet were added at each chassis corner and a Bud handle to the top of the cover. The total weight is 24 pounds. The power supply cable is Belden No 8418 microphone cable. There are 8 No. 20 conductors enclosed in a shield with an outside coating of rubber. A male octal plug at one end of the cable goes to the supply; a female plug at the opposite end goes to the transmitter, or into a small terminal box constructed around a 5 × $2\frac{1}{4}$ × $2\frac{1}{4}$-inch Minibox which is mounted on the workbench and can be seen in one photograph. The various supply voltages are then available for experimental work at the terminal strip on the Minibox. Because of the high current required at 6.3 volts, two conductors

(Continued on Page 16.)



The general utility supply is built on an amplifier-foundation chassis. The large resistor is the high-voltage bleeder; the smaller one is the VR-tube dropping resistor. At the left-hand end of the chassis are a control for the variable-bias output, pilot lamp, and power switch. The output cable plugs into an octal socket at the opposite end. The supply may be plugged into equipment having an appropriate male input connector, or into the terminal unit shown in the foreground for experimental use on the work bench.

A CHEAP LOW POWER (5W.) CONVERTER

*P. WARD**

"A ringing choke converter," you say. "Hummph, not much favourable reference to them in any of the standard texts. Inefficient and poorly regulated they say. Best left alone!"

Well, discard any textbook prejudice and you may discover how to produce 5 watts of the best d.c. for only 45/-. This may be the cheapest five watts you could find in 1965. Just glance at the V/I curves (Fig. 1). They are all for the same unit, used at different input voltages. Absolutely no change in component values was necessary over the input range 2 to 12 volts (although for optimum efficiency this may be desirable). When the unit was designed, components were selected for a 6 volt input.

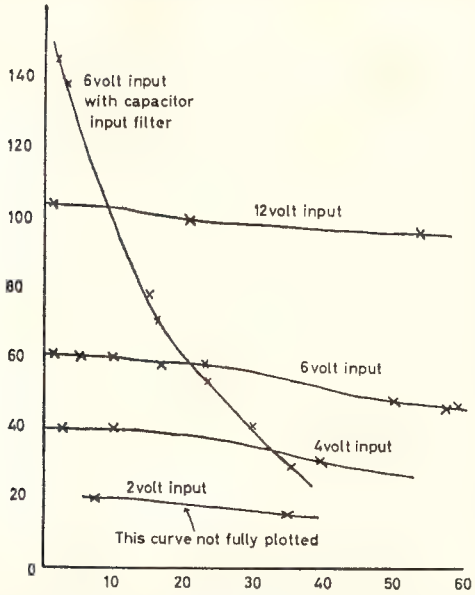


Fig. 1.—V/I curves (output) for ringing choke converter, with varying input voltages (240 turn double wound secondary).

In the same enthusiastic breath, I must concede that the textbooks were right in some respects. Efficiency of this unit, for 6 volt input, is only 55%, and power output is limited to about 5 watts with the core I used. Also, unless the unit is carefully cased, it is annoyingly noisy!

The output waveform of a ringing choke converter is like that shown in Fig. 2. This output is obviously suited to half wave rectification, and no text read to date shows any other system on such a converter. Indeed, it was only a touch of Scotch blood that made me tack on a full wave rectifier to get the last drop of output. But now, after exhaustive tests, I am convinced that the full wave rectifier is far superior. Granted we are working with a waveform as in Fig. 3, but provided we use a choke input filter, stability under load is good. Remember, that the extra filtering needed is partly compensated for by the higher efficiency of the choke at 2 Kc., which is the approximate switching frequency of this unit.

For interests sake, Fig. 1 contains a V/I curve for a capacitor input filter. Stability under load variations is shocking. Not only that, but the high back e.m.f. that will be developed across the collector and emitter under no load conditions can be disastrous. One of my ASZ17's suffered a C/E "punchthrough" in this manner, and within 30 seconds the coil, wiring and transistor were all smoking ruins.

The circuit shown (Fig. 5) was originally designed to power a small battery receiver requiring 90 volts h.t., from a 6 volt accumulator. Unfortunately, not enough wire was at hand to put enough turns on the secondary but the problem was easily solved by running 12 volt input!

Note that, unlike many ringing choke systems, no complex switches are needed to initiate oscillations. The secret of the low cost of this unit lies in the coil assembly. The ferrite core is one scrounged from the local t.v. service department—and was originally part of the e.h.t (flyback) transformer. These cores are usually one of the several types described by Mullard in its pamphlet (reprint) dealing with the building of push-pull d.c. converters. If anyone wishes to mathematically work out exact coils for their particular core, I suggest they get hold of this article. Details of the coil given below are suitable, with a simple change of primary tappings, for most cores you will be able to get hold of—and there will be no mathematical headaches.

Having obtained your core, prepare two bobbins, one for each half of the core, as shown in Fig. 4. Four tag-eyelets can be attached to a small piece of matrix board which can in turn be attached to the bobbin. Aquadhere, a p.v.a. glue, makes this job easy. I have used a separate bobbin for primary and secondary, so that either can be replaced or rewound, without affecting the other.

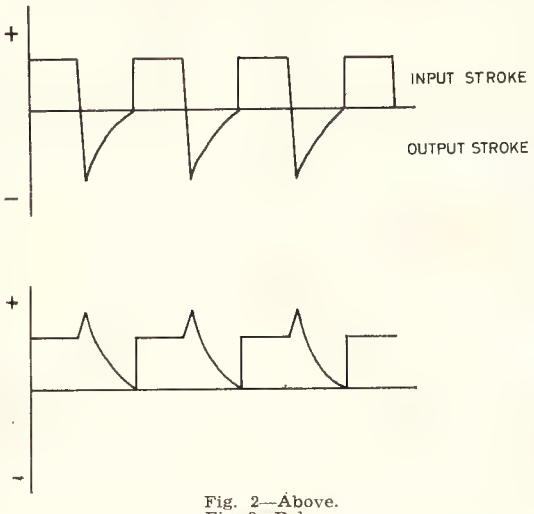


Fig. 2—Above.
Fig. 3—Below.

In order to be able to juggle your circuit for best results with the particular core you have, use 18 s.w.g. and wind 110 turns on the "primary" bobbin. Tap at 30, 50 and 70 turns.

It is interesting to note that, despite all indications to the contrary in reference books, my converter gave highest efficiency with more turns on the feedback winding than on the power winding. In fact, power winding was only 30 turns, whilst feedback was 80 turns.

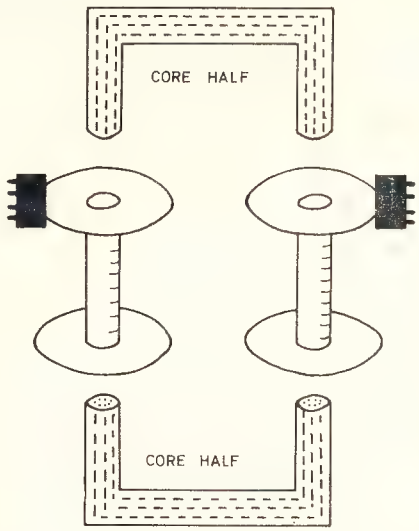


Fig. 4.

On the secondary bobbin, double wind a coil to give the required output. Work on approximately five turns per volt. "Pot" the coils in the resin usually supplied in "Fibreglass Repair Kits." Don't forget to add hardener!

Before assembling coils on to core make sure that ends of core halves are a perfectly flat fit. This is very important. If necessary lap the ends on a piece of emery paper laid on glass. Bolt the halves firmly together.

Having built the circuit, take these precautions before applying power.

Place a 2 ohm current limiting resistor in the power lead until approximate value of R1 and correct primary tap is ascertained. Check your polarity again.

If using a capacitor input filter to boost the voltage, always ensure that the secondary is loaded to prevent high back e.m.f. damaging transistor.

The value of R1 must now be established by experiment. In my mind, optimum value is 330 ohms, but I suggest you start with at least 670 ohms. Connect the emitter to the tap giving a 50-turn primary power winding first, and load the secondary with a 4.7K 2 watt resistor.

(Continued on Page 16.)

* Teacher's Residence, Litchfield, via Donald, Vic.

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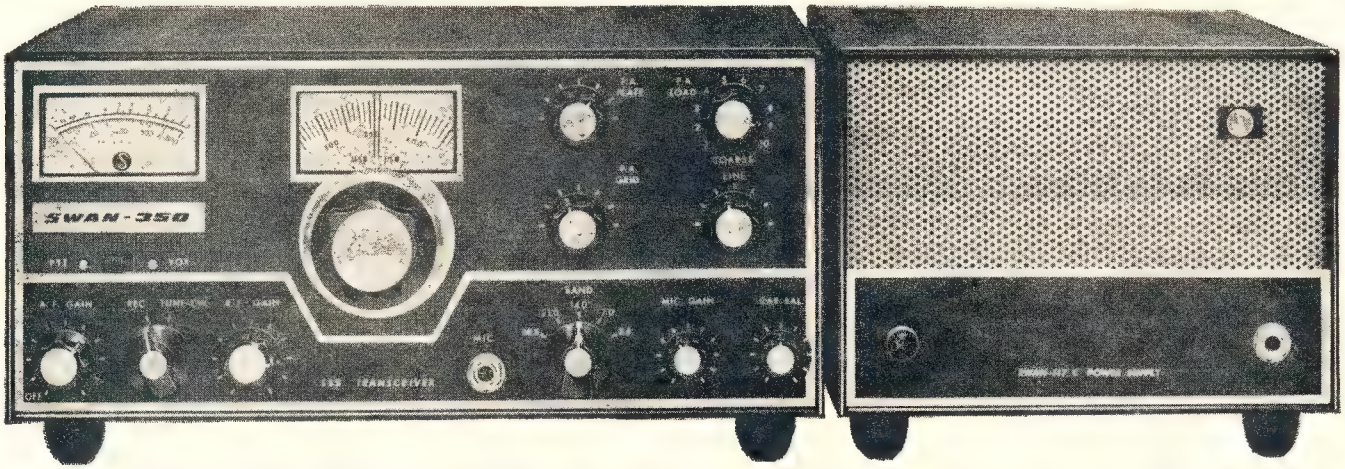

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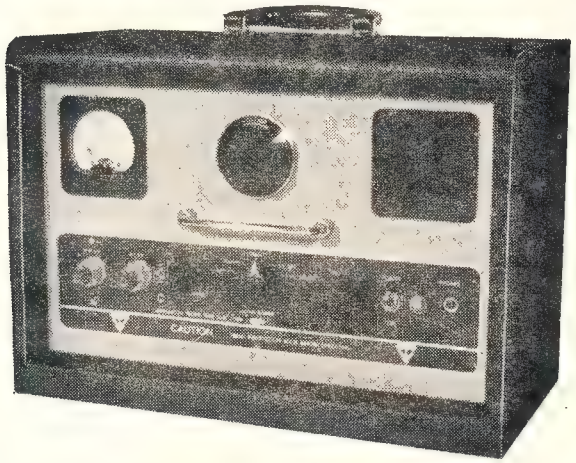

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END-FED AERIAL MATCHING UNIT*

F. G. RAYER, Assoc.I.E.R.E., G3OGR

THE use of a reactive network for matching dissimilar impedances is generally well known[1] and the aerial matching unit described here is simply an application of these principles. It is intended for use on the 3.5 Mc. to 28 Mc. bands, with pi-output transmitters, and end-fed aerials of indeterminate length. In tests, it allowed a 120 watt transmitter to be fully loaded on all bands (3.5-28 Mc.) with any aerial from 6 ft. to 160 ft. in length. A length greater than 160 ft. was not available during tests, but could be used.

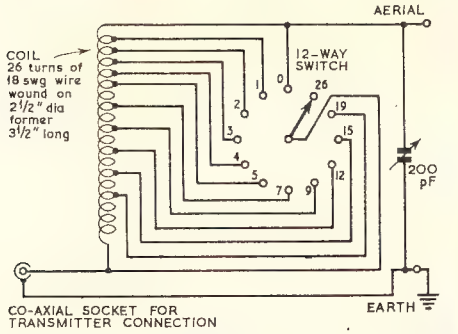


Fig. 1. Circuit diagram of end-fed aerial matching unit.

CONSTRUCTION

The circuit is shown in Fig. 1. The 12-way switch positions are marked to agree with the number of coil turns in circuit. With the switch in the "0" position, the coil is completely shorted, while the "26" position puts the whole coil in circuit. An ordinary single pole 12-way rotary switch was used, and appears to be adequate, though a transmitter type switch would have been fitted if to hand. A make-before-break switch is preferable to the break-before-make type. A wide spaced variable capacitor is necessary: the one fitted was from an old 1154 transmitter. The voltages across the capacitor depend on the aerial, as well as transmitter power, and spacing at least equal to that of the p.a. tuning capacitor is recommended.

Coils of other dimensions could be used, though the coil shown can be wound on a readily obtainable Eddystone 5 in. x 2½ in. diameter Frequentite former. The wire is strained, looped through one end hole, twisted and soldered. The 26 turns are wound on, and the end similarly fixed. To simplify construction, short pieces of ordinary single flex were soldered on, tappings being staggered as in Fig. 2. This allows short leads to the switch with no crossing.

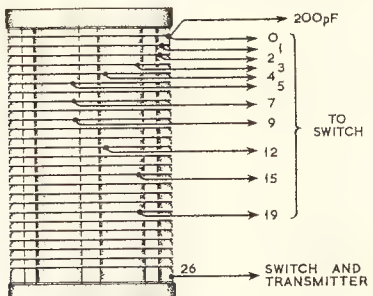
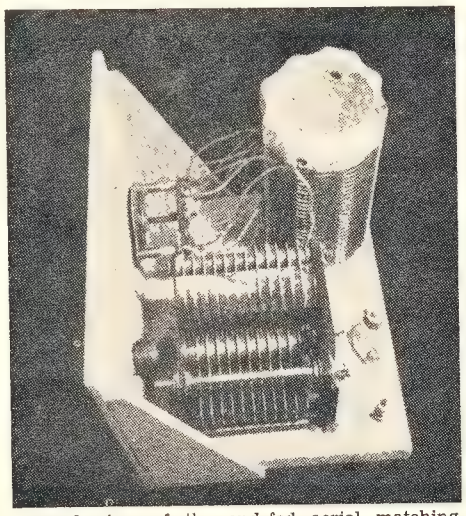


Fig. 2. Details of coil and tappings. The coil is wound on an Eddystone Frequentite former.



General view of the end-fed aerial matching unit.

The layout in Fig. 3 was adopted, with plywood panel and ¾ in. thick baseboard. Dimensions can be changed to suit a different capacitor or coil, or to fit an existing cabinet. The coil should be at least half a diameter from a metal chassis, if used.. The coil is mounted with brackets, and the flexible leads are cut and soldered to the switch tags. The switch was fitted with the dial shown in Fig. 3. The switch stop pin was removed to allow complete rotation.

A stand-off insulator provides an aerial terminal. The earth terminal is connected to the co-axial socket (Figs. 1 and 3). A short piece of 75 ohm or similar co-axial cable is used between the pi-output socket of the transmitter and the matching unit. The length of cable depends merely on a convenient layout of equipment.

AERIALS

The length of the aerial need not be known. However, adjustments to the matching unit are in general less critical if the wire is fairly long. Better radiated signal strength is also to be expected from reasonably long aerials. If the aerial is very short, adjustment of the capacitor is likely to be critical. In tests with an aerial 4 ft. long, sparking over began in the 12-way switch when the transmitter was loaded to an input of only about 75 watts, and this set a limit to the shortness of aerials tested.

If an r.f. ammeter is included in the aerial lead, current will be fairly high on bands where the aerial length is near an odd multiple of quarter-waves, but fairly low where the aerial length is near a multiple of half-waves. This arises because Watts = I^2 x R, where R is the resistive part of the aerial feed impedance, and is high at half-wave points. Therefore low aerial current on some bands does not indicate inefficiency.

When the aerial system is unchanged, maximum current, as shown by the ammeter, will agree with maximum radiation, as checked with a field strength meter. If the aerial system or operating frequency is changed, a change in aerial current is to be expected.

When a standing wave indicator is included in the co-axial lead from transmitter to matching unit, nearly zero reflected power is to be expected when almost perfect matching is obtained. When loading of the transmitter is obtained at some impedance other than that for which the s.w.r. indicator is intended, reflected power may be shown. This does not necessarily mean that there is any drop in power radiated from the aerial, because the transmitter pi-output circuit can feed effectively into a line with a high standing wave ratio[2]. When the co-axial cable is only a few feet long, it is not necessary that transmitter or matching unit adjustments are selected to obtain any particular impedance in the circuit between transmitter and matching unit. In practice, this circuit is likely to be working at an impedance of some 50 ohms to 100 ohms or so.

If a harmonic filter of particular impedance is included in the co-axial lead from transmitter to matching unit, it then becomes necessary to adjust the transmitter and matching unit until this circuit is working with minimum reflected power at the filter impedance, as shown by a s.w.r. indicator.

(Continued on Page 16.)

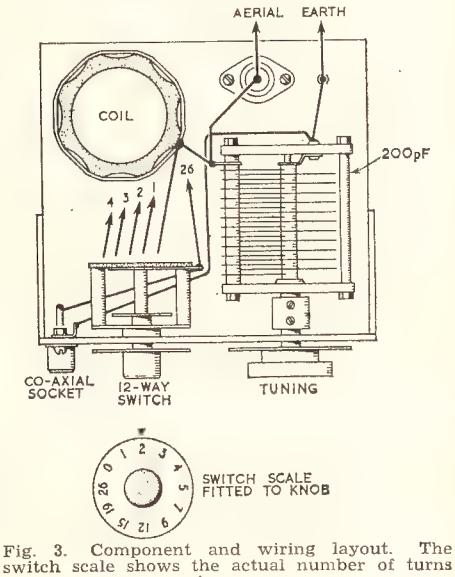


Fig. 3. Component and wiring layout. The switch scale shows the actual number of turns in use.

* Reprinted from "RSGB Bulletin," November, 1964

VK-ZL-OCEANIA DX CONTEST, 1965

W.I.A. and N.Z.A.R.T., the National Amateur Radio Associations in Australia and New Zealand, invite world-wide participation in this year's VK-ZL-Oceania DX Contest.

Objects: For the "world" to contact VK, ZL and Oceania stations and vice versa. Note: VK and ZL stations, irrespective of their locations, do not contact each other for Contest purposes.

Dates: Phone: 24 hours from 1000 G.M.T. on Saturday, 2nd October, 1965, to 1000 G.M.T. on Sunday, 3rd October, 1965. C.w.: 24 hours from 1000 G.M.T. on Saturday, 9th October, 1965, to 1000 G.M.T. on Sunday, 10th October, 1965.

RULES

1, There shall be three main sections to the Contest:—

(a) Transmitting Phone
(b) Transmitting C.w.
(c) Receiving Phone and C.w. combined.

2. The Contest is open to all licensed Amateur transmitting stations in any part of the world. No prior entry need be made. Mobile Marine or other non-land based stations are not permitted to enter.

3. All Amateur frequency bands may be used, but no cross-band operation is permitted.

4. Phone will be used during the first week-end and C.w. during the second week-end. Stations entering both sections must submit separate logs.

5. Only one contact per band is permitted with any one station for scoring purposes.

6. Only one licensed Amateur is permitted to operate any one station under the owner's call sign. Should two or more operate any particular station, each will be considered a competitor, and must submit a separate log under his own call sign. (This is not applicable to overseas competitors.)

7. Entrants must operate within the terms of their licenses.

8. **Cyphers:** Before points can be claimed for contact, serial numbers must be exchanged and acknowledged. The serial number of five or six figures will be made up of the RS (telephony) or RST (telegraphy) report plus three figures which may begin with any number between 001 and 100 for the first contact and which will increase in value by one for each successive contact.

Example: If the number chosen for the first contact is 021, then the second must be 022 followed by 023, 024, etc. After reaching 999, start again from 001.

9. **Scoring:** (a) **For Oceania Stations other than VK/ZL**—2 points for each contact on a specific band with VK/ZL stations; 1 point for each contact on a specific band with the rest of the world.

(b) **For the rest of the world other than VK/ZL**—2 points for each contact on a specific band with VK/ZL stations; 1 point for each contact on a specific band with Oceania stations other than VK/ZL.

(c) **For VK/ZL stations**—5 points for each contact on a specific band and, in addition, for each new country worked on that band, bonus points on the following scale will be added:

1st	contact—	50	points
2nd	„	40	„
3rd	„	30	„
4th	„	20	„
5th	„	10	„

For this purpose the A.R.R.L. Countries List will be used with the exception that each call area of W/K, JA, and UA will count as "countries" for scoring purposes as indicated above.

10. **Logs:** (i) **Overseas Stations:**

(a) Logs to show in this order—date, time in G.M.T., call sign of station contacted, band, serial number sent, serial number received, points. Underline each new VK/ZL call area contacted. A separate log for each band must be submitted.

(b) Summary Sheet to show the call sign, name and address (block letters), details of station, and, for each band, QSO points for that band, VK/ZL call areas worked on that band.

"All-band" score will be total QSO points multiplied by sum of VK/ZL call areas on all bands, while "single-band" scores will be that band QSO points multiplied by VK/ZL call areas worked on that band.

(ii) **VK/ZL Stations:** (a) Logs must show in this order—date, time in G.M.T., call sign of station worked, band, serial number sent, serial number received, contact points, bonus points. Use a separate log for each band.

(b) Summary to show—name and address in block letters, call sign, score for each band by adding contact and bonus points for that band, and "all-band" score by adding the band scores together; details of station and power declaration that all rules and regulations have been observed.

11. The right is reserved to disqualify any entrant who, during the Contest has not strictly observed regulations or who has consistently departed from the accepted code of operating ethics.

12. The ruling of Federal Contest Manager W.I.A. will be final.

13. **Awards: VK/ZL Stations**—The W.I.A. will award certificates to the top scorer on each band and the top scorer in each VK/ZL district provided that at least three entries are received from the call area or the contestant has scored 1000 points or more.

Overseas Stations: Certificates will be awarded to each country (call area in W/K, JA, and UA) on the following basis:—

1. Top scorer using "all bands" provided that at least three entries are received from the "country" or the contestant has scored 500 points or more.
2. Other certificates may be awarded, to be determined by conditions and activity.

N.B.: These are separate awards for C.w. and Phone.

14. **Entries:** All entries should be posted to Federal Contest Manager, W.I.A., Box N1002, G.P.O., Perth, Western Australia. VK/ZL entries to be **received by 15th December, 1965.** Overseas entries to be **received by** 15th January, 1966.

RECEIVING SECTION

1. The rules are the same as for the transmitting section, but it is open to all members of any S.w.l. society in the world. No transmitting station is permitted to enter this section.

2. The Contest times and logging of stations on each band per week-end are as for that transmitting section except that the same station may be logged twice on any one band—Once on Phone and once on C.w.

3. To count for points, logs will take the same form as for transmitting, as follows: date, time in G.M.T., call of station heard, call of station he is working RS (T) of the station heard, serial number sent by the station heard, band, points claimed. Scoring is on the same basis as for transmitting section and the summary should be similarly set out with the addition of the name of the S.w.l. society in which membership is held.

4. Overseas Stations may log only VK/ZL stations but VK receiving stations may log overseas stations and ZL stations, while ZL receiving stations may log overseas stations and VK stations.

5. Certificates will be awarded to the top scorer in each overseas scoring area and in each VK/ZL call area provided that at least three entries are received from that area or that the contestant has scored 500 points or more.

☆

ATTENTION ALL AUSTRALIAN AMATEURS

This is R.D. Contest Month. Get on the air over the week-end of the 14th and 15th, make contacts and, most of all, **put in your log.** Help your Division win the Trophy.

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Wireless Institute of Australia, Victorian Division

W.I.C.E.N. EXERCISE, 4th and 5th SEPTEMBER, 1965

J. BATTRICK, VK3OR, and M. OWEN,* VK3ZEO*

MANY people outside this Division have asked us "How does your W.I.C.E.N. work?" This brief description of our forthcoming exercise in conjunction with a two-day car trial of 500 miles centred on Bendigo may put the basic picture. It is based on past policy modified by our recent Gippsland experiences.

Firstly, the requirements of the organisation for which we are communicating, that is the V.A.D.C. and the Volkswagen Club of Victoria. These requirements go to Joint State Co-ordinator VK3ZEO and in this case are:

1. Five mobiles to accompany trial officials around the circuit setting up and closing control points.
2. Five portable stations at check points to gather and relay scores.
3. Scores to be collated at trial headquarters in Bendigo then sent to Melbourne for further collation and information.

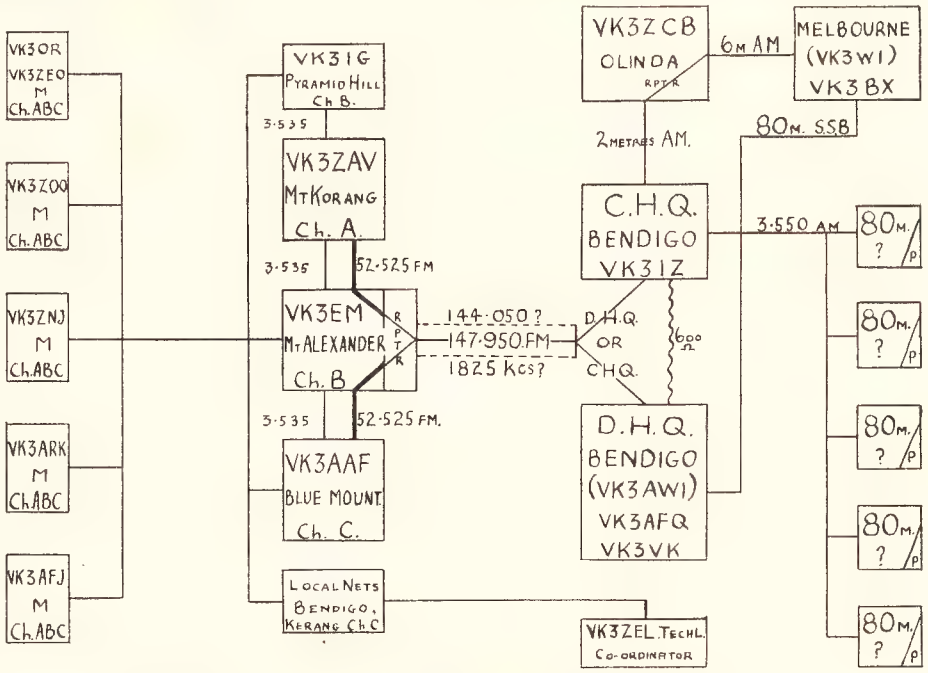
Secondly, these requirements are translated into a communciations system by Joint State Co-ordinator VK3OR in liaison with technical Co-ordinator VK3ZEL, Zone Co-ordinator VK3VK, and State Controller VK3AFQ. Out of this comes the system illustrated above. The Zone Co-ordinator acts in liaison with the local P.M.G. Divisional Engineer, organises his zone members and surveys and selects sights for D.H.Q. (Disaster Headquarters) and C.H.Q. (Communications Headquarters). The State Controller is concerned with control of the actual operation when the "show is on" and prior to this organises personnel to man the communications points.

THE COMMUNICATIONS SYSTEM

On the left of the diagram are five mobiles, each with three-channel 2 metre f.m. These are the fast-moving mobiles concerned with trial control and they work into a hilltop relay station. As the trial covers 500 miles from Gisborne, near Melbourne, to Kerang on the Murray River and back, three relay sites are necessary. Channel C is used in the southern area to Blue Mountains control (VK3AAF). In the centre, Channel B to the main control at Mount Alexander near Bendigo (VK3EM), and in the north to Mount Korong control (VK3ZAV) on Channel A. At Pyramid Hill a short duration control may be necessary for a few hours during the night.

These three controls are all in line-of-sight contact and are operating continuously so must be on separate frequencies or they will mutually interfere. Control A and C are linked to Control B on 6 metre f.m. (52.525 Mc.) and a "pipeline" 2 metre f.m. channel X (147.9 Mc) from Mount Alexander to Bendigo completes this circuit from mobile to Bendigo. At Mount Alexander is a manned talk-through repeater from 6 f.m. to 2 f.m. channel X and vice versa which allows automatic contact to relay points from Bendigo. Backups between hilltops is 80 metres (3535 Kc.). Every circuit is backed up with an alternative. The pipeline on channel X is backed up with channel Y (144.05 Mc.) so our f.m. system has three mobile channels in the centre of the band 145.854 Mc. channel A, 146.0 Mc. channel B. 146.146 Mc. channel C, and link frequencies at each end.

On the right of the diagram the 80 metre a.m. portables on 3550 Kc. link direct to Bendigo C.H.Q. (VK3IZ) skip permitting. Home relay stations have provided helpful service here if skip is long. This 80 metre circuit terminates in Bendigo at C.H.Q.



This C.H.Q. separation from D.H.Q. has been found essential. At Disaster Headquarters in early stages of our development, a "gaggle" of h.f. transmitters and receivers on frequencies 2 to 6 Mc. operated by W.I.C.E.N., C.F.A., Police and everyone else proved impractical so we positioned our communications headquarters at the most convenient site for separation from other services, a mile or so, and also if possible on the high point in the area for v.h.f. links. Also, we were able to keep off-duty operators, maintenance crews, etc., out of everybody's hair.

Disaster Headquarters was linked to Communications Headquarters by radio links once, but now in an actual emergency we can usually rely on direct phone lines provided by the P.M.G. It is interesting to note that at Bruthen in Gippsland, W.I.C.E.N., R.A.C.V., C.F.A. and Forestry had transmitting sites around the perimeter of the town with phones into D.H.Q.

In this exercise we may depart from this policy as no other outside communications systems will be operating. We hope to place the end of the pipeline from Mount Alexander at D.H.Q. (VK3AWI) and work direct to relay points through the repeater. The 80 metre terminal will be separated still as an 80/40 s.s.b. link is to be established direct from VK3WI Melbourne to Bendigo D.H.Q. This circuit will be duplicated from Bendigo C.H.Q. to Region 8 control station site (VK3ZCB), at Olinda near Mt. Dandenong, using 2 metre a.m. and high gain beams, thence through VK3ZCB's manned repeaters to VK3WI on 6 metres a.m.

At VK3WI direct lines to D24 Police Headquarters are installed for communications during disasters. In this exercise information will simply be handed to officials of the clubs running the trial. This communication system is basic and is a result of some experience, but it is flexible. Naturally, some features are pertinent to an exercise of this type but the five mobiles could be 10 on one channel, with similar nets working on the other two channels and doubled for relief operators. The five portables could be eight or so with extra operators. In this exercise mobile operators put their gear in a trial official's car and operate 24 hours. They don't have to thrash their own vehicles around the trial course and are in the hands of some of Victoria's most experienced drivers.

(Continued on Page 16.)

* Joint State Co-ordinators, W.I.C.E.N., Victorian Division, C/- Box 36, East Melbourne.

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2, 5, 10, 25, 50 or 100 μF. 25v.w.	2/6
2, 5, 10 or 25 μF. 50v.w.	2/6
8 μF. 350v.w. or 450v.w.	3/–
16 μF. 350v.w. or 450v.w.	3/10
24 μF. 350v.w. or 8 μF. 500v.w.	4/–
32 μF. 350v.w.	4/3
16 μF. 500v.w.	4/10

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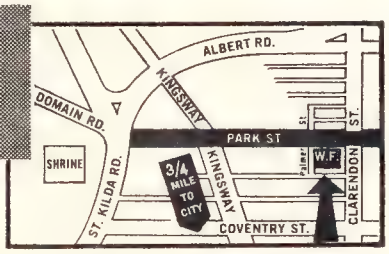

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LOW POWER CONVERTER

(Continued from Page 9.)

All you have to do now is switch on, and, with voltmeter and milliammeter in the output circuit, adjust R1 and the emitter tap for maximum power output. If maximum efficiency does not give sufficient output volts add a few turns to the secondary. If efficiency is not at least 50%, look for poor mating of core halves, or the primary winding reversed.

Now it is up to you to think of some good uses for this circuit. ●

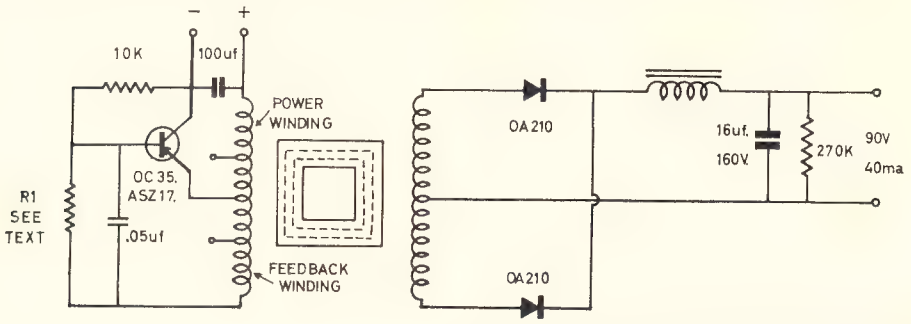

Fig. 5.—Circuit of Author's Converter (choke is unknown value, salvaged from vibrator pack in junk box).

AERIAL MATCHING UNIT

(Continued from Page 11.)

MATCHING ADJUSTMENTS

The 12-way switch is initially set at "0" and the capacitor at minimum. The p.a. anode and output capacitors of the transmitter are then adjusted in the usual way. If the transmitter cannot be loaded sufficiently, the match-unit switch is rotated to introduce 1, 2, 3 or more turns and the 200 pF capacitor is rotated until correct loading is obtained.

On the h.f. bands, few turns will be required, but on 3.5 Mc. in particular, 12, 15, or more even turns may be required. As various combinations of inductance and capacitance can provide a suitable impedance match, there is some overlap of switch and capacitor settings. One switch position can be noted for each band, for reference, or may be found in a few minutes by rotating the switch, beginning with no turns in circuit.

The transmitter can be loaded with its pi-tank output capacitor in many positions, corresponding to a wide range of output impedances. The output capacitor may be adjusted for about 75 ohms (as if working into a dipole) and loading adjusted with the matching unit. In all cases the p.a. tuner is dipped for minimum anode current in the normal way.

RECEIVER COUPLING

The unit can be employed to improve matching between the aerial and receiver. Where aerial and receiver impedance are reasonably similar, no improvement will result from including the unit. But on bands where a bad mis-match exists, including the unit will increase signal strength. Adjustment is simply for best results, as shown by the receiver signal strength meter.

A matching unit of this kind intended for reception only can be constructed with a small receiver type coil and capacitor. ●

REFERENCES

[1] "R.F. Transformers using L-C Networks." R. C. Hills, G3HRH, RSGB Bulletin, May, 1962.

[2] "Some Reflections on Standing Waves," R. C. Hills, G3HRH, RSGB Bulletin, January, 1964.

Publications Committee Reports That . . .

With pleasure at their last meeting they had in attendance the Federal Secretary and the v.h.f. sub-editor.

Correspondence was received from VK's: 2QL, 2ZTM, 4SS and VE7BGK, in addition to letters from R. L. Gunther, Rev. Bro. Ellis, and R. L. Erwin. One technical article was sent in by VK3ZRX.

Many correspondents are unaware that all items for the various columns must be at our printers by the 8th of each month, it is too late if they are sent in in time for the publication committee meeting night. Therefore, this month we have to omit the notes from Y.R.C., Hunter Branch, N.W. zone VK7, and the V.H.F. section. Please have your notes in before the deadline which is the last mail on the 8th of each month.

Arrangements are being made, in conjunction with VK2QL to print Prediction Charts each month similar in layout to those already published. These charts will be of assistance to the DX hounds and will, we trust, serve a useful purpose. This feature will increase "A.R." costs by an additional £200 a year, hence your committee had to have this money available before making promises they may have been unable to finance.

The new Call Book was discussed and agreement reached regarding layout and cover design. If you have not already notified the P.M.G. of change of address, then your old address will have to be shown in the forthcoming edition.

Due to delays, we did not introduce the new cover design last month, hence our report did not reflect the correct position. However, this month all should be in order and we trust a new front cover design will be used.

Readers are asked to forward technical articles and to comment to the committee regarding "A.R." Constructive ideas do assist our planning and are always welcome.

The question of the W.I.A. handling overseas publications was discussed and certain suggestions were put forward for consideration. This matter will have to be fully discussed before a final decision is reached.

SILICON REPLACEMENT

(Continued from Page 8.)

were used for the 6.3-volt lead, and one conductor plus the shield for the ground connection. In connecting the two filament windings in series, the polarisation must be correct. If the — 12-volt supply doesn't work with the first connection you try, reverse connections to the 5-volt winding.

Three Vector boards were used, one cut to $6\frac{1}{4}$ by 2 inches for the h.v. rectifiers, capacitors and resistors, one $3\frac{7}{8}$ by $1\frac{3}{4}$ inches for the 250-volt filter components, and one $2\frac{3}{4}$ by $1\frac{1}{2}$ inches for the components of the variable negative supply.

The 50-watt bleeder resistor, the 3500-ohm dropping resistor for the 0B2 tube, and the 0B2 tube itself are mounted along one side of the top of the chassis near the ventilating holes in the side of the cover. The feed-throughs mentioned previously are used here. The power supply runs stone cold, hour after hour.

The front of the chassis contains the rheostat for negative-voltage adjustment, pilot lamp, and the d.p.s.t. on-off switch. At the rear of the chassis are installed an octal socket for the power cable and the A.C. cord with its fused line plug. Tekni-Cals are used appropriately fore and aft.

The supply pictured is only one example of the compact, efficient and cool-operating supplies that can either be constructed separately as in this case, or incorporated in a transmitter or receiver by the use of silicon-diode rectifiers. ●

☆

W.I.C.E.N. EXERCISE

(Continued from Page 13.)

Normally, of course, 24 hours' continuous operation by one person should be avoided if possible.

At Melbourne VK3WI keeps the P.R. side, informing relatives of whereabouts of operators (XYL's are rung every night between 4 and 5 and informed where their menfolk are and what they are doing!!). VK3WI keeps tabs on location of everyone and is the contact with the outside world.

Each hill top site and headquarters has 10 or dozen personnel and in this exercise it is the responsibility of the leaders to organise equipment and personnel, their welfare (sleeping, watch-keeping, accommodation), to set up correct message handling procedure (on the air and log keeping) to secure spares, battery chargers, etc., etc. This we hope will train future controllers and co-ordinators.

Except for the hard-bitten core of crazy type mobiliers who have done this before, personnel are spread about to have in each group both new and experienced operators and personnel from the local zone are spread to cover all different activities.

Actually this is a gigantic field day with 50 to 100 people engaged. We believe that all those who participate in this sort of activity enjoy themselves, as well as gaining unique experience to fit themselves for a roll that the Amateur Service is anxious to fill for the good of the community.

SIDEBAND

By Phil Williams VK5NN.

As promised last month we are to discuss the audio amplifier for an s.s.b. exciter. Although this amplifier is designed for a phasing type exciter, its characteristics are suitable for a filter exciter, because a "tailored" frequency response to restrict the audio response to the 300 to 3000 cycles/second band, will definitely improve the communications quality of the signal, and reduce the spurious "whiskers" on the signal.

The audio amplifier usually gets very little attention at the design stage, and following completion of the transmitter, has very little more consideration provided it works. Once the touch of a screwdriver or finger on grid 1 of value 1 produces a "squeal," the amplifier has passed its tests with "flying colours." So often, however, the colours are rather "tatty," and troubles originating in the early audio stages are blamed on other things. This applies equally to a.m. transmitters, as well as s.s.b. exciters.

It is very important to realise that the audio stages in the s.s.b. exciter must provide clean, "noise and hum-free" audio frequencies, which when added to, or subtracted from your final frequency, are your signal. Experience has shown me that there must be no squaring of signals due to wrong biasing, hum level must be at least 70 to 80 db. down below the peak audio, and the transmitted radio frequency signal **must not** get back into any of the audio amplifier grid circuits. Once you have added a linear amplifier with some hundreds of watts peak input to its anodes, it is likely that you have quite a bit of r.f. floating around the shack, and this stuff just looks around for microphone cables—even half an inch of unshielded microphone lead, an ungrounded microphone case, or a plastic mike case, can cause pandemonium when you talk, and is one of the most diabolical of all faults to trace and remedy. The best remedy is to do everything properly from the start, and even then, keep your fingers crossed, with half a dozen small ceramic capacitors handy for bypassing grids for radio frequencies.

In a later article it is intended to discuss the layout of the s.s.b. exciter to provide the best isolation of critical stages, but for now, the important thing to say about the audio amplifier is that it should be located near the front panel, say, on the left hand side, and the power transformer and chokes on the rear, right hand side. The exciter output stage (shielded) should also be at the rear to allow the r.f. to go away from the rear, while the mike is plugged in at the front near the first audio stage. Of course the power cord also enters the rear of the chassis, and any front panel a.c. switches are taken to the other front corner of the front panel—certainly not combined with the audio gain potentiometer, as on the t.v. receiver.

Buy a shock-mounted, shielded socket for the first audio tube. This is a good idea to avoid those "ting-ting" noises when the chassis is knocked, but don't forget to earth the shield to the nearest chassis lug via a short flexible lead, as the p.v.c. shock mount is an insulator.

Heater supply to the first audio stage can be a source of hum or r.f. These should be balanced to ground by earthing each lead via a 47 ohm, ½ w. carbon resistor, this being the only earth on this wiring. The earth should be somewhere near the audio tube, but several inches away. The leads should be twisted to reduce the inductance loop of the heater wires, they may be shielded or bypassed with 0.01 μF. ceramic condensers if r.f. is a problem. A separate heater winding for the audio values is a help, if one is available.

The microphone socket, so I have found, can be insulated from the front panel in the interest of avoiding r.f. pickup, but the lead inside the chassis should continue as a screened lead, with the screen earthed solidly at the same position as the input grid components. This idea was given to me by a manufacturer of high powered transmitters. It avoids a hum pickup loop, and both active and screen of the mike cable may be bypassed to earth by small 47 p.f. ceramic condensers, near the socket. All this r.f. treatment may seem unnecessary, but can be very helpful if you ever get to the high power class.

For the normal male voice it is necessary to reduce low frequency response in the audio stages. In the event of a crystal microphone, either piezo or ceramic, being used, this process can be started by terminating the microphone with a 100k. to 200k. resistor instead of the usual 1 megohm. From here on, small coupling capacitors between stages in the preamplifier will give a rising response up to about 800 cycles, with quite low response below 300 cycles, which is below the effective range of the audio phase-shift network in a phasing type exciter.

In the diagram shown, of a typical "treated" audio amplifier, small condensers are included to shunt the grid resistors. These give a slow roll-off above 4 Kc. to make sure nothing in the high audio range gets through to the l.p. filter, and, again guards against any strong r.f. getting in.

Cathode resistors, usually unbypassed, are included, so that grid leak bias, and its attendant rectification troubles will not occur.

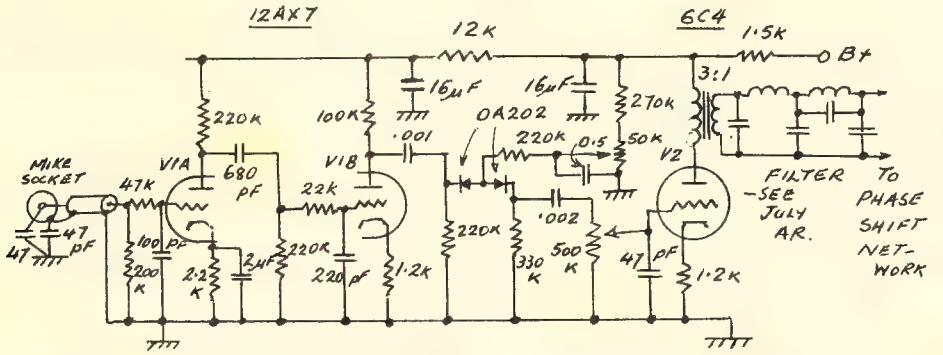

Fig. 1.—Audio Amplifier for S.s.b. Exciter—with restricted response and series clipping.

A series diode adjustable clipper is included in the amplifier, even though the experts warn that clipping should not be used in s.s.b. exciters. I agree that they cause distortion, but if the bias is set to clip only about 1 or 2 db. off the peaks of the loud consonants, no noticeable distortion results, and the filter (see last month's s.s.b. notes) removes any undesirable components. The clipper will then only distort the loud-voiced shack visitors, without causing flat-topping in the r.f. section of the transmitter.

An amplifier planned along these lines, using the circuit of fig 1 will give a fairly well "rounded" audio signal to the phase shift network, with little in the range which the latter is not designed to handle.

Perhaps I should warn people of my own attempts to filter out frequencies below 300 cycles by means of an inductance/capacitance high-pass filter. Unless you can obtain well screened (mu-metal) inductances, the hum pick-up is quite excessive, so that small coupling capacitors are much better for Amateur constructors.

These first few articles have dealt with the audio amplifier to assist those who may want to improve existing phasing exciters.

I am pleased at the response to the new series of s.s.b. notes. There have been several matters of interest sent to me already, for later issues. By request, next month we shall discuss "Collecting bits and pieces for the s.s.b. exciter project." 73, Phil VK5NN.

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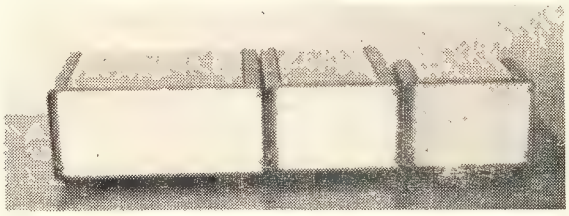

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ADDRESS BY THE POSTMASTER-GENERAL (HON. ALAN S. HULME, M.P.)

Given at the Breif Club Luncheon. Menzies Hotel, Sydney, 17th June, 1965

First let me thank you for inviting me to address this luncheon meeting of the Breif Club. I was very happy indeed to accept your invitation.

If we cast our minds back it gives us a shock to realise that only 120 years ago man's means of communication depended entirely upon the speed of surface transportation. Messages took months—sometimes years—to be carried from one point to another.

Then in 1844 came the telegraph, an event that revolutionised communications throughout the world. And only thirty-two years later—in 1876—the human voice was for the first time transmitted over wires. The first words were used by Alexander Graham Bell, when he said over his telephone, "Mr. Watson, come here."

The people in that era could have been excused for believing that they had reached the ultimate in communications. Who could foresee then that in the future the human voice could be transmitted through space without wires. But inventive minds were still eagerly at work and it remained for the man who was only two years old when the telephone was invented to demonstrate that there was a practicable means of doing just that—transmitting sounds through space. This was Marconi.

The progress of radio technology over the years since then represents one of the more notable achievements in the fields of science and engineering. Some of us remember the great public interest which was created during the early days of radio, the first messages between Australia and the United Kingdom and the novel and exciting experience of receiving the first Australian broadcasting stations with the primitive receivers of that time.

From these beginnings and in a period of less than the average life span, radio has now reached into more fields of activity than can be readily enumerated.

Apart from television and sound broadcasting services, radio is providing large capacity telephone facilities by means of v.h.f. (very high frequency) and microwave techniques, communication facilities to the outback areas by means of the Flying Doctor Service and other special radio telephone services, emergency services in times of national crisis and communication aids in the civil aviation and maritime services. There are also the business users whose vehicles have calling facilities to individual networks.

What's more, over 4,000 Amateurs make radio their hobby. These enthusiasts are not only improving their knowledge of the radio art, but are promoting goodwill through their contact with other Amateur operators in various parts of the world, apart altogether from their assistance in times of emergency.

The twentieth century has therefore seen scientific and technological progress on a scale undreamed of previously and, in the field of radio, these advances are being utilised to the benefit all sections of the community.

And today, of course, we have television, the most powerful and popular entertainment medium so far devised.

Australian television was born in September, 1954, when the Federal Government gave its approval for the introduction of television into Australia in accordance with the following principles:—

(a) The service would follow the same general lines as had proved so suitable to Australian conditions in relation to broadcasting. There would be both a national and commercial television service.

(b) Television should be introduced on a gradual basis commencing with one national station and two commercial stations in Sydney and Melbourne.

(c) The services should be extended to other capital cities and to country areas as soon as circumstances, including financial economic consideration, permitted.

(d) Satisfactory programme standards should be established and maintained, not only to avoid the misuse of the medium, but also to facilitate the positive contribution which it could make to the welfare of the Australian people.

I know you will agree with these principles. The gradual approach to the introduction of television was designed not only to ensure the best possible service, but also to avoid the difficulties experienced in many overseas countries and in order that each stage of development might be related to the economic circumstances of the nation.

The Australian Broadcasting Commission was entrusted with arrangements for the establishment and conduct of the national television service in Sydney and Melbourne through transmitters to be provided and operated by the Australian Post Office. Following public inquiries into applications received for licences for commercial television stations in Sydney and Melbourne, licences were subsequently granted for two stations to be established in each of these cities.

The first television station to commence operating in Australia was the commercial TCN Sydney—on the 16th September, 1956—almost two years to the day after the Federal Government had decided to approve its introduction. The introduction of other commercial and national stations soon brought the total to three each in Sydney and Melbourne. Then followed installations in the other capitals, and the extension to country areas.

And so Australians were introduced to an entertainment medium as influential as anything ever to come before them in the entire history of the nation. Programmes are comprehensive and varied and cover most things that one might wish to view—talks, interviews, discussions, women's sessions, documentaries, outside events, children's sessions, musical appreciation, drama, comedy, quiz and panel programmes, religion, rural programmes, sport and variety.

Prior to the introduction of television to Australia, genuine feeling had been expressed by large sections of the community that the medium might have unfortunate effects on some sections of the population, particularly children. On this aspect, the Federal Government accepted the view of the Royal Commission on Television that although there would be problems to face, arising mainly from the social impact of television, these all revolved around and depended for their solution on the overriding question of the establishment and maintenance of satisfactory programme standards.

Fundamentally, the standards determined by the Australian Broadcasting Control Board require the observance in television programmes of ordinary good taste and commonsense, respect for the individual opinions of the public, proper regard for the special needs of children and respect of the law and social institutions.

Particular attention has been given to the question of suitable "family and children's programmes," to ensure that programmes provided in the early part of the evening might be viewed, with complete confidence, by the family groups of all ages. These standards have earned the commendation of persons and organisations especially interested in such matters and have been a very important influence in ensuring that the taste and judgment of Australian programmes have been of a very high order.

Television comprises the art and science of converting the variations of brightness of a scene imaged on the sensitive surface of a camera into corresponding electrical voltages, which are transmitted over cables, as in closed circuit television, or carried by electro-magnetic waves, in the case of "radio links" for television broadcast at the reception point, these voltages are reconverted into variations of brightness of the fluorescent coating of a "picture tube" which is viewed directly or projected on a screen.

As the eye may distinguish a quarter of a million points in typical television picture, it is obviously impractical to transmit these all simultaneously over as many channels. A scanning method is therefore used to scan the information to be transmitted, line by line, so many to the inch.

The number of lines required for each picture depends on how much detail we wish to transmit and this depends on the viewing angle. Early television started with 30 lines, with very crude images. As the art has progressed, the number of lines has increased steadily and 600-800 are now practical. The Australian system operates on 625 lines.

Television is an extravagant medium, particularly in bandwidth, and for this reason its uses in communication are restricted. In closed circuit systems, where bandwidth is cheap, its use for instructional and supervisory purposes is spreading rapidly. Striking examples are the demonstrations of micro-surgery in colour to large groups, and the control of a complete steel rolling mill from one point.

Because of the large bandwidths required, television broadcasting can be carried out only on very high frequencies, which behave rather like light rays, so that reliable transmission does not go far beyond line of sight.

Television transmitting aerials are therefore elevated on high masts on mountain tops. The effective radiated power of such stations is increased to several times the actual transmitter power used by concentrating the radiated energy in a flat beam near the horizon.

Most television receiving aerials are more or less directional, to increase signal strength, cut out interference and to minimise reflections or "ghosts" from objects not in the direct line of the transmitter.

Australian television is rapidly passing from the era of independent programme generation to that of networks or stations. These are formed by the exchange of programmes recorded on film, by chains of microwave links, by co-axial cables such as between Sydney and Melbourne, but at present mostly by the exchange of programmes recorded on videotape, which has transformed the industry by the abolition of "real time."

As Australian television started in the capital cities, spaced some hundreds of miles apart, it was possible to re-use the same channels in most cities, and to space the channels widely in each city with the rapid increase in the number of television stations, and the conversion of "patches" of coverage into a continuous area, problems overlap, or adjacent channel, and of co-channel interference are becoming important. With more than 80 stations operating or being established and only 13 channels available, the time is not far away when most television reception areas will be limited by interference rather than by lack of signal strength.

It is estimated that the present 13 channels can provide for five programmes in the capital cities and three in most country areas. When more channels than these are required it will be necessary to use the "ultra high frequencies" where up to 40 channels are available. Unfortunately these frequencies do not carry as well as the existing television frequencies, much higher radiated powers are necessary and even then ranges are considerably reduced. Installation costs become higher also nevertheless they are coming into use in Europe and the U.S.A. and may be used here for educational television transmissions.

The planning of television services in accordance with these principles is implemented by the Australian Broadcasting Control Board which determines the sites for all television transmitters, allots the channels and power to be used, outlines specifications for the transmitting aerials and decides the frequency offsets to be used.

The Australian Broadcasting Control Board also has the task of studying possible future developments and planning for their orderly introduction into the television services. For example, it is at present surveying a wide range of opinion on the use of television broadcasting in education.

By the end of 1966, 91 per cent. of the population will be within range of one or more high-powered television stations. Filling up the gaps in coverage and improving marginal reception is then likely to be effected by a relatively large number of low-powered installations, picking up and relaying the programmes of the main high-powered stations either by cable to individual subscribers to "community antenna systems" or by "translating" them to channels for local re-transmission on very low power.

As regard colour television, the Board is keeping in close touch with the investigations of differing methods proceeding overseas at present the main difficulty resides in the cost and complexity of the colour receiver. Colour television is not likely to be introduced into Australia for some time yet.

As with monochrome (black and white) television, the Board will establish standards facilitating the interchange of television material from overseas. The Board is awaiting with interest the recommendations of an international conference which will consider three possible standards contending for adoption in Europe. This becomes particularly important with the imminence of intercontinental television relay by satellites or other means. Such relays, at least for a start, will be picked up at a special receiving centre (in the same manner as at present for B.B.C.

sound programmes) and fed into the network of existing stations.

Television today is a £300 million industry, employing directly and indirectly many thousands of people. Its impact on the Australian economy has been tremendous but, at the same time, because it has been introduced on a planned stage by stage basis, it has not had the adverse effect economically that has been so evident elsewhere in the world. Fifty-four stations are operating at present and the total in the current programme will be 87 by the end of next year.

I feel that I should make some reference here to frequency modulation broadcasting because a number of representations have been made to me for the re-introduction of this facility.

I have studied this matter very thoroughly, including the developments which led to the cessation of f.m. transmissions, and especially the comprehensive statement issued in 1961 by my predecessor in office, Sir Charles Davidson.

There is no doubt in my mind that the decision to use for television and for fixed and mobile radio communcation services the frequency band used previously for f.m. transmissions was made only after a most careful and expert consideration of all factors involved.

The Radio Frequency Allocations Review Committee examined this thoroughly. This was a committee of experts from Government departments and private enterprise, under the chairmanship of Professor Huxley.

The basic reason for the establishment of the committee was to plan the future use of the entire frequency spectrum.

Apart from the needs of television, the committee was faced with a tremendous demand for radio services used by business, industrial and professional organisations and essential community services.

During the years 1955/1960, services such as these had increased by over 200 per cent.—from less than 8,000 to over 24,000. It was apparent also that provision must be made for a further 20,000 services over the next five years.

To permit this development and to provide for expanding television services, the committee recommended the discontinuance of f.m. experiments. The Government was in accord with this recommendation.

A great deal of reference has been made to the development overseas of frequency modulation broadcasting. But in my view, overseas cases are not comparable with the Australian situation.

Australia is well served at present by its medium frequency broadcasting services and it is more in the public interest that the resources should be devoted to the further development of these and other essential services, rather than the re-introduction of frequency modulation broadcasting — notwithstanding that the latter has qualities not possessed by medium frequency transmissions.

Much of the agitation for f.m. broadcasting comes from a relatively small number of high fidelity enthusiasts. I sympathise with their views, but the Government could not introduce f.m. solely on the grounds of its qualities.

It has been suggested that a frequency modulation service could be established to serve the capital cities only, using the frequencies between 92/94 Mc used now for fixed and mobile services and that these could be re-allocated to the u.h.f. band.

In my view, any estabilshment of f.m. must be on a Commonwealth wide basis and not confined to a section of the listening public. It would need to be provided also for people in country areas who are less adequately catered for than people in the capital cities.

One of the most important points in this matter is that, in the event of the inauguration of f.m. broadcasting, it would be necessary for it to operate in the u.h.f. band. This would immediately render obsolete all equipment now capable of receiving it in the v.h.f. band.

The only justification for introducing a new system for broadcasting in the Commonwealth is the inability to meet all present deficiencies by expansion of the services in the medium frequency band.

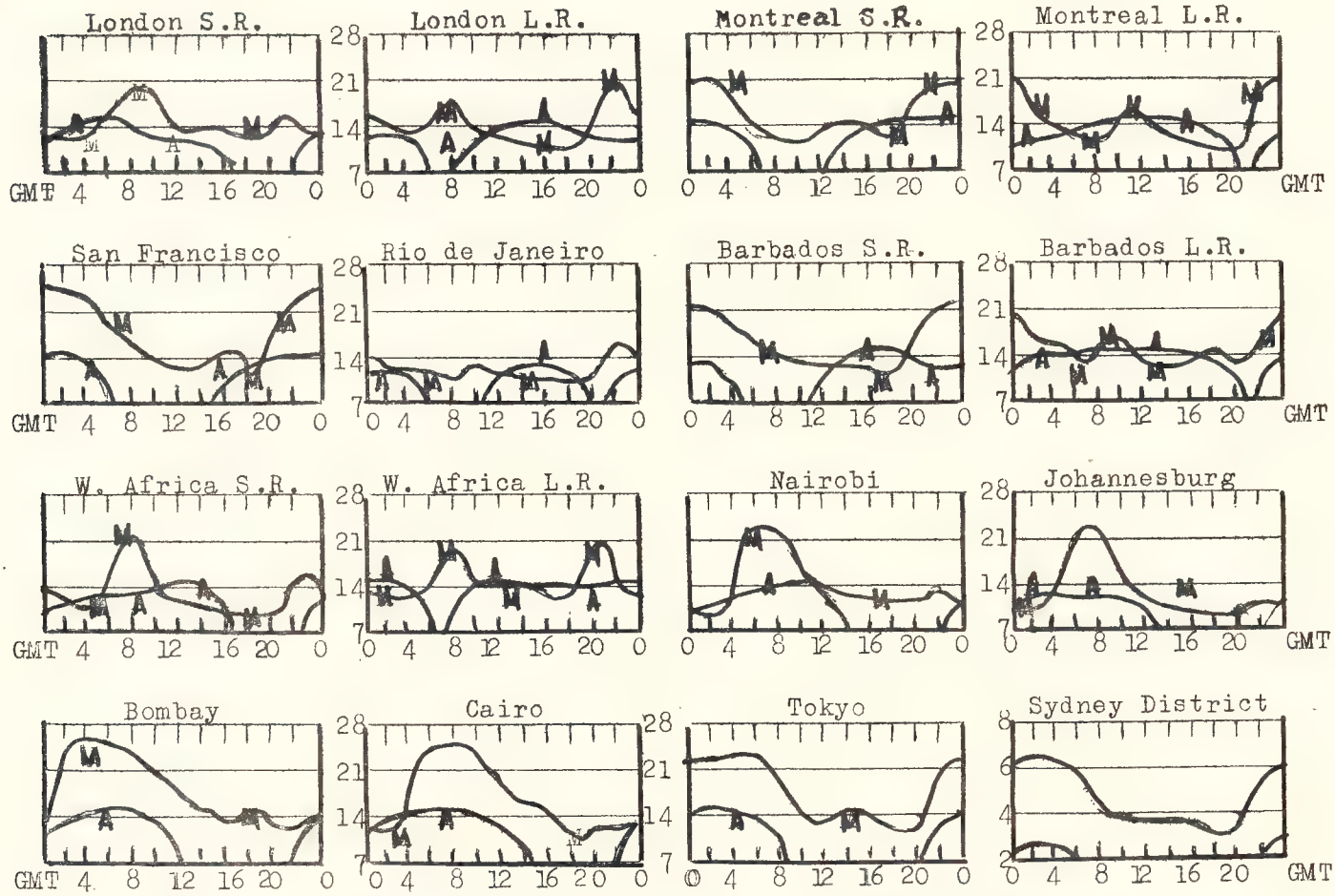
The shortcomings now present are relatively few and would not in themselves warrant the introduction of f.m. broadcasting with its wide implications. Such a step would involve high expenditure on the part of the Government which I do not believe would be justified, and by the operators of stations and the general public.

Moreover, further development of other types of services such as medium frequency broadcasting and television would be affected because of the resources which would need to be devoted to the new project.

Television has an assured future but the Government will adhere to its policy of planned expansion and will not consider any further extensions—apart from translator stations—until the current programmes have been implemented.

In the meantime we are turning our thoughts to widening the educational facilities that t.v. can provide and increasing the locally produced content of television programmes. These are both very important aspects of t.v. which can open up even wider fields for Australian artists, script writers, technicians and others associated with the industry.

PREDICTION CHARTS, AUGUST 1965



M is the Maximum Useable Frequency. A is the Absorption Limiting Frequency.

SWL

Sub-Editor, Chas. Aberneathy, WIA-L2211,
30 Urunga Parade, Miranda, N.S.W.

During the past 12 months it has been my pleasure to compile this section of "Amateur Radio," and I feel now that another member may like to try his or her hand at piecing our page together. If any member is willing, just let me know and I will gladly assist in any way possible.

INDUCTANCE

Inductance is the property of a circuit which accounts for the production of an induced voltage by a changing current. A voltage is induced in a conductor whenever magnetic lines cut across it. When a magnetic field is estabilshed around a coil of wire, by connecting it to a d.c. voltage source the flux lines cut across adjacent wire turns, and consequently, induce a voltage in the coil. This induced voltage is always of such polarity as to oppose the change of the current which produces it (that due to the applied voltage). Because the total induced voltage in the coil always opposes any change of the current, it is called a counter electromotive force. The greater the inductance in a circuit the greater is the opposition to current changes, that is, the greater is the counter electromotive force.

If the coil is connected to an a.c. voltage source, the magnetic field around the coil builds up in one direction, collapses to zero, then builds up in the opposite direction, and collapses again, all in rapid sequence. This results in the continuous induction of counter electromotive forces, which oppose the varying current flowing due to the applied voltage.

The symbol for inductance is L, and is measured in Henrys. If the current in a coil changes uniformly at the rate of 1 amp. per second, and induces a voltage of 1 volt in the coil, its self inductance is said to be 1 Henry.

NEW SOUTH WALES

We are still experiencing good attendances at our meetings with new faces to be seen on each occasion. We were sorry to receive the resignation of our Secretary, Tom Harding, who has been a stalwart for some considerable time, during which period he has carried out his duties to the letter, and our thanks go to him for a job well done. Our new Secretary is Gordon Grouch, to whom we extend a hearty welcome, and members wishing to contact him can do so at his Bay Street, Botany, N.S.W., address.

Owing to the moving of his QTH, Don L2022 has been out of S.W.Ling for some time. He is now settled, and hopes to resume activity in the near future.

VICTORIA

The Group has maintained a high attendance of over 30 members throughout the first half of the year. We thank Messrs. Crohan and Cook for their donation of unwanted radio parts. If you have any radio parts to dispose of they could be marked S.w.l. Group, and left at the rooms. During the next half of the year we have arranged for some lectures by persons from Government departments together with some interesting technical visits.

The S.W.L. constitution for Victoria has been forwarded to Council for their consideration. Members will be informed of the outcome in due course. it is good to see in the Federal report that there is some activity with the s.w.l. certificates, but we must wait until next year, it appears, for this report.

June "A.R." states that the next Call Book is due for issue in September. So far we have not been asked for an up-to-date list of s.w.l. members. Let's hope we have not been forgotten again this year.—Ian L3006. (Forward list to Editor now, Ed.)

Greg L3138. Congratulations on getting that R.H. award. QSL's to hand, VK9, HPI, HB9, WA3, UB5 and ZC5. Thanks for that copy of the mag.

Eric L3042. Rarest QSL's, DU1, FR7, HK7, HM1, HS1, KZ5, OR4, PJ2, UA2, UQ2. Heard, 1.8 Mcs., 17 VK, 2, 3, and 5. 3.5 Mcs., JA1 and VE7. 7 Mcs., 70 countries in all continents. 14 Mcs., BY3, DU1, KG6, KM6, KR6, KH6, CP5 and 9M4.

Lloyd L3141. QSL's to hand, OA4, ZD5, SV0, VP2, KL7, IT1, YJ8, W9/XU, EP2, VR1, HR1, PJ2 and KR8. Pleased on your run up the ladder.

Warwick L3211. Latest cards, 4S7, KM6, OH2, IT1, CR6, K7/3W8, SV0, W9/XU, CP8, ON4, HC1, UL7. Very good on your five new countries and your skip up the ladder.

Noel L3101. Heard VE6, VK8, ZD5, K9, VS6, KC6, BV1, ZS6, I1 and CR6, with a QSL from OH4.

QUEENSLAND

Afton L2136/VK4. I trust by now that you have returned from an enjoyable and profitable trip. I am still waiting to get the message on that tape.

Col L4027. Welcome to the page Col. Col uses a Trio (r-4JB rx with a folded dipole antenna. O.K. on the 8 metre set-up. I find that very interesting also.

SOUTH AUSTRALIA

Alan L5065. Heard OA4, ZL1, ZL2, ZL4, JA5, KC4, W's, ZK1, VS, CR8, YN1, VY5/W8, KS6 and KP4. Cards to hand, YJ8, W4, 9M8 and KZ5. I hope that you managed to get channel 10.

WESTERN AUSTRALIA

Reports on band conditions in W.A. say that 10 and 15 metres have been quiet, with 20 metres being open during the day. Not much from Europe or West Africa, but W's plentiful. 40 metres is the best for W's and Europe at the moment from 2330-0300 and 0700-1200 G.M.T. Peter L6021.

Peter L6021. Congratulations on that VU2/4S7 contest win. Heard ZS8, CR8, HR2, YJ8, OD5, SP5, YV5, HK4, etc., with QSL's from OZ2, SP4, ZD8, CE0, VQ6, 7Z3, 9L1, 7Q7, etc., and a rare one, ST2AR.

Alan L6029. Very good on your intention of trying for a ticket, and I wish you well. Heard F9, W9, W0, T1, WA4, F5, TG8, JA4, ET3.

Geoff L6030. I trust that you are successful with that tower project. Heard W7, ZE1, VS9, SP9, WA9, F8, XE1 and KL7.

Bryan L6028. Another S.w.l. going to try for the A.O.P.C., well I do hope that you get it. Heard JA9, W9, ZE7, KA2, VE6, G3, FR7, FK8 and TI2.

TASMANIA

Conditions during the past month were: 80 metres very active, s.s.b. wise with severe QRN on occasions. 40 metres nil. 20 metres very active in daylight hours. 15 metres noisy with openings not as good as in May.

Greg Johnston. No luck re those i.f. formers as yet, but suggest that you write to Ham Radio Supplies whose QTH appears in "A.R." Heard W's, KW6, KL7, KH6, ZS5, XE's, UD6, ZK1, 4X4, XE's, OE3, JA's, 9M4, CR7, UH8 and VP7.

GENERAL

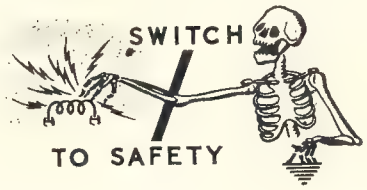
ZL1109, A. W. Green, 22a Okahu Road, Kaitaia, Northland, New Zealand, would like s.w.l. pen friends.

Alan Raftery, L5065, 22 Princes Street, Croydon, S.A., is seeking the QTH of CR8BH.

Tim Corbin L5067 has an interesting idea for cheap QSL cards. For information write to him at C/o Athelney House, St. Peter's College, Hackney, S.A.

For the card swappers a few more contestants. JA1-3893, Seiziro Miyasaka, 779-4 Tagacho, Hitachi Ibaraki, Japan. WPE4IGT, John Seay, 366 Wisteria Street, Fairhope, Alabama, U.S.A. WPE3DTP, Robert Binau, 2704, Johnson Dr., Williamsport, Maryland, U.S.A. WPE1ESB, Ambrose Maxim, 23 Lambert Street, Winthrop, Maine 04364, U.S.A.

Once aagin another section draws to close, so cheers, and all the best DX, but remember, "Rights are always associated with responsibilities."—73, Chas. L2211.



VHF

NEW SOUTH WALES

The major v.h.f. events set down for August will be the 6 metre hunt on the 11th. The foxes will be John 2ZGB and Dennis 2ZDW and the start will be at 8 p.m. at Marsfield.

The v.h.f. section of the R.D. will now be a two-section event in VK2. To comply with the local section, it will be the same rules as used last year. In general it follows the National event except that the major cities (Wollongong, Sydney and Newcastle) and the nearby areas are divided into zones for point scores. All v.h.f. bands may be used but no cross band and a station may be re-worked after an elapse of one hour. To comply with the National part (section E) the same log will be used but every time a new station is worked the contestant will be required to underline the call sign. This is then added up to become his National score. It is very good to see the inclusion of the v.h.f. section and every operator is urged to operate and **submit a log.** The Federal Contest Committee would welcome suggestions re the v.h.f. section. A map and rules appears in the August V.h.f. Newsletter.

The 2-metre fox hunt is set down for Wednesday, the 25th, at 8 p.m.

Over the June holiday week-end VK1VP/P and VK2PT worked a distance of 177 miles on 432 Mcs. In America the 432 distance (via land) is up to 1040 miles, according to a recent report.

The V.h.f. Group technical committee has come up with a 2-metre mobile project. It is a complete rig built into a Playmaster case (12½ in. x 7½ in. x 5 in.) and consists of a a.m. transmitter (3/12 final), modulator, convertor and receiver. At the moment the prototypes are being assembled and some details on construction are expected in the near future. At least a dozen units are expected to be built in the near future by Sydney Group members.

V.H.F. OPERATORS

There is, for the first time, a section in this year's Remembrance Day Contest for you. The date, 14th-15th August. Prove you want it by entering your log. Full details appeared in July "Amateur Radio."

A problem always facing the committee controlling mobile and field events in VK2 is to keep the rules up to date with the changing conditions and ideas. In Sydney in the past five years there has been such as vast improvement in main roads and river crossings that old events which used the tricks of poor access can no longer apply. In the south, Georges River for a long time only had a bridge and two "slow" punts. The new road across Salt Pan Creek takes five miles out of the East Hills if you are along that section of the river. The Silverwater Bridge between Ryde and Parramatta and the "high" speed connecting roads, together with the new Gladesville and Figtree Bridge system which is soon to have the last bridge completed and reduce that road system by over two miles, makes the Parramatta River easy. The Roseville bridge and approaches are well under way and will be completed in a few months. With these bottle necks removed the higher average speed, that fox is finding that he has to resort to much more cunning if the hunt is to last for any time.

Over the last few months the committee increased the airline radius from the start by five miles to a maximum of 15 miles (based on the start). Supper is not served until 15 minutes after the nominated close of the hunt. Even with the modernisation of the rules and thinking there is still one unsolved quesion which appears to plague all the large Australian cities. That is, why there are so few mobile contestants in relationship to the Amateur population of that area? In Sydney it is hoped that the new mobile project will enable operators to make full use of all available frequency space and give everybody a channel to themselves.—2ZTM.

D X

VP4, OA4, BV, ZM7, 7GI, FP, AC5, MP4, ZC6, TY2

Sub-Editor: ALAN SHAWSMITH, VK4SS,
35 Whynot Street, West End, Brisbane, Qld.
ADDRESS CORRESPONDENCE FOR THIS PAGE DIRECT TO THE SUB-EDITOR

A speculative question of the moment might be made on the overall improvement noticeable on the bands. Will this newly emerging cycle eventually produce conditions similar to the 1957-1960 era? There seems to be a case for optimism, and for those who weigh the dollar spent in Amateur Radio against the return the time may now be propitious for the investment for gear for better DXing.

While July and August are usually quiet months, the coming spring should bring the bands to life and may provide a pointer for things to come.

NOTES AND NEWS

Pakistan: The old master Gus W4BPD has of late been active from AC1, AC2 and AC3 but by the time this reaches your mail box he is expected to be working from AP land. Gus is usually very easy to find. His c.w. fqs. are 14032 and 14060. 14105 will spot him for s.s.b. QSL to P.O. Box 7388, N.Y., 10001.

Tristan Da Cunha Island: ZD8HL is planning a DX-pedition to ZD9. Hopes to get started in July or a little later. More information if it comes to hand.

Western Samoa: The new prefix is 5W1. 5W1AG, 5W1AZ, 5W1AC (QSL via K6EXO) are active. The latter mainly around 14115, afternoons east.

Crete: As of now three active stations are signing SV0WR, SV0WFF, SV0WGG. 14 Mcs. c.w. and s.s.b.

Saudi Arabia: HZ0CPL reported QRV 14022 at 2030z. If not a phoney this is a good one for WPX.

Ceylon: 4S7IW on 14120 seems on regularly around 1300z. QSL to W8RTW.

Turkmen: UH8BO is worked sideband on 14120. He will take c.w. on this frequency.

Balearic Islands: EA6BC is on irregularly. 14205 a.m. No times available but 2100z may be best.

Trucial Oman: MP4TBO 14056 at 2030z. Box 8 Sharjah—or VE1AKZ. One or two others also on from this country. MP4TBM.

Sao Tome: CR5SP still QRV on 21 Mcs. Works States mostly. No other information as yet.

Sudan: Remember ST2AR. Most DX'ers will do. His licence is being withheld temporarily anyway. Reason is until Government instability is overcome!

Faeroes Island: The call OY2GHK has been issued to Stu W2GHK to use when he sees fit. Hoping to be on soon. All bands and modes.

Turkey: If you've worked TA1DB around 14025—forget it. Reported phoney.

Thailand: HS1HS 14106, 14272, 14295. QSL to Box 2008, Bangkok.

French Somaliland: Remember FL8AK around last December. He is to be on again in July and August, 14040 and 14250. QSL K7UCH.

Ellice Island: VR1S and VR1B, both around 14020 afternoons east. The former via Box 288 Suva. VR1B via VK2EG.
(Much of the above by courtesy of L1DXA.)

Honiara: Several VR4's live on the hill behind Honiara town. Notably VR4CR and VR4ED on c.w. and one or two others on s.s.b. 14 and 7 Mcs. any afternoon east.

VP8 Expedition: Expected to commence mid-June and continue 18 months. This will include South Shetlands and South Georgia besides the Falklands. Sponsor Hammarlund. All bands and modes.

Kure Island: Remember KH6EDY who gave so many a new country. Now we have another prefix operating. K5CQK/KH6. Name Kim. Mode s.s.b. 14 Mcs. QSL U.S. Coast Guard, U.S. Navy Station, Box 36 F.P.O., San Francisco. (Courtesy S.w.l. C. Thorpe.)

Johnston Island: W6BGT/KJ6. Bob, s.s.b. 14 Mcs. 0500z.

Rhode Island: SV5LP is reported as a permanent resident. 14050 and says QSL via Buro.

Georgia: UF6UB now on s.s.b. 14120 at 0300 or later.

Kirghiz: Boris UM8FZ is another starter on s.s.b. 14121 and listens 14260.

Afghanistan: Charlie YA3TNC is regular and very active. Try 14240. QSL K0RZJ.

Western Carolines: (as separate from Eastern Carolines), KC6AA and KC6BY 14287 around 1030z. Possibly QRT early August.

Faeroes Islands: Another news itsm on this spot says OY1R 14010 and OY2J 14020 are on irregularly.

Kuwait: Nasir 9K2AN says he is on every Thursday 14082 at 2300z.

Christmas Island: Don is regularly active. His call VK9DR. Frequency usually 14105 but sometimes c.w. VK9XI is also on the air.

Central African Rep.: TL8SW is on almost daily. But will be QRT in September for about six weeks then back on air again.

Spanish Guinea: TJ1AC is planning an expedition to this spot next October. More news if it comes to hand.

Franz Josef Land: DX-pedition was planned for June and July, but UW0IN who is going, says it is off for a while. Vic UA1KED is already QRV from here. 14210-0200.

Cocos Keeling: VK9CR is on occasionally and sometimes sheds VK6RU. Try 12100 at 1300z. He does not bother with c.w.

Indonesia: Still only at the rumour stage, but Don Miller of W9WNV fame says he has permission to operate from the land to out north. However, there's many a slip!

St. Pierre and Miquelon Islands: Clem W2JAE expects to sign as FP8CK very soon.

Turkey: Late news says that TA2BK is now on and authentic.

EA6, EA9: WA2QNW is now in Spain and has obtained permission after a long struggle to operate in all the EA9 countries. More news when it comes to hand.

(The above news supplied by courtesy L1DXA, DX Ed. R.S.G.B., Fla, Dx-er and S.w.l. C. Thorpe L4022.)

QSL's

Rare ones and their managers.

AP5HQ via W4LRN
CR4AJ via W2VCZ
CR6JJ via W4QCW
CR7IZ via K3HQJ
CR9AH via W7ZAS
EA9EO via EA4GZ
EL2AC via K5SGJ
EL2AD via K5SGJ
VP2LS via K1IMP
VR1G via W6BSY
VR2DK via W2CTN
VP2GTA via W2CQA
VS9MG via WA2WUV
VU2NRA via W4ANE
YA3TNC via K0RZJ
ZD8BB via W7ZMD
ET3USA via K7UCH
EP2RV via G5RV
EL8X via SM5AIO
HC8FN via WA2WUV
HK0QZ via K9ECE
KS6BO via K4TWF
OD5BZ via W8ZCQ
KA2DF via W2CTN
KR6BQ via W2CTN
LX3BD via DJ6SI
SV0WF via W2PCJ
SV0WGG via K1EAT
SV0WPP via W5EGR
TJ1AC via 5N2 Bur.
TL8SW via W1BPM
UA1KED via RAEM (Box 88)
VP1GFQ via W0GFQ
VP1WH via W6SHC
VP2AX via W8EQA
VP2MS via K3HGX
VP2DAD via K1IMP
ZD8DX via WA4KCV
ZD8HL via W2CTN
ZD8C1 via K4SCO
ZD8JC via W5EBJ
ZD8RH via W2CTN
ZS2MI via ZS1CZ
VP1TA via W2CTN
FB8XX via 5R8BC
PY7BAL/0 via Box 842 Recife.
HL9TQ via P.O. S.F. 96358
CP8AM via K4GOX
3A2AV via L1ZBS
7G1H via K9BPO
9A1PM via W2CTN
9M8KZ via W6KTE
4S7RS via 4S7WP
5R8AN via W3KVQ
5H3JR via W2SNM
4X4IX via WA2KNC
9J2AB via W6BAF

SUMMARY

The Bands in AUGUST: By comparison DX is a little quiet at this time. On 80 mx is the usual W and J prefixes audible after 0900z. The short, sharp opening to Europe on the s.p. around 1900z has been at this QTH conspicuous by its absence. However, as spring advances this path should improve. 40 mx is not at its best yet, although the usual Asian and N. American prefixes are workable nightly. The regular s.p. opening to Europe may show itself a little earlier than the past two years and QSO's might be possible in late August or early September, from 1700z, 14 Mcs. May be the best band as summer approaches with the general level of DX signals up somewhat. 21 Mcs.: This band has already been showing some good form and 28 Mcs. is open erratically to the States. A gradual improvement is expected.

My best wishes to Bert VK5BB for a speedy return to fitness and at the risk of being pedantic a plea again for DX news. This is your column and any titbits of doings anywhere are truly welcome. Any Oceania news is particularly needed. Good Dx-ing, chaps. —73, AL, VK4SS.

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FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL

EXECUTIVE MEETING, 17th MAY, 1965

After the usual adoption of minutes of the previous meeting, the business arising was dealt with. This involved a draft letter to the Minister of Customs regarding the duty free entry of a mechanical filter for one of our members. The Secretary was instructed to forward this to the Minister supporting the principle of duty free entries for those items not made in Australia. Some discussion took place on the purchase of a suitable copying machine for the Executive and it was finally resolved that the 3M machine demonstrated should be purchased.

The Business Manager reported that replies to his circular on "QST" subs. were being received from members agreeing to take out subs. through the W.I.A. and that monies were being put into a special account. The Communications Manager reported that the Geneva Story had been typed and was now ready for printing. Prices for the sales of R.S.G.B. publications were agreed and the Treasurer was to send samples to all Divisions for their perusal. The major time of the meeting was devoted to a study of the P.M.G. Handbook which was examined in detail for corrections and amendments.

CHANGES OF QSL BUREAUX ADDRESSES

Notification has been received from the following that new addresses are:—

Lebanon—R.A.L. QSL Bureau, c/o P.O. Box 1217, Beirut, Lebanon.
U.S.A. W4—F.A.R.C.—W4AM, P.O. Box 13, Chattanooga, Tenn., 37401.
USA W7—Willamette Valley DX Club Inc., P.O. Box 555, Portland, Oregon, 97207.

All of the above addresses are effective immediately.

SEVENTH SCANDINAVIAN ACTIVITY CONGRESS

Brief rules are as follows:—C.W.—1500 G.M.T. 18 Sep 65 to 1800 G.M.T. 19 Sep 65—call "CQ SAC." Phone—1500 G.M.T. 25 Sep 65 to 1800 G.M.T. 26 Sep 65—call "CQ Scandinavia." Bands—3.5 to 28 Mcs. Serial Nos. RST or RS followed by 001, 002, etc. Prefixes to be contacted—LA, LA/P's, OH, OH0, OX, OY, OZ and SM/SL. Points—1 per complete contact. Multipliers max.—8 per band. Final score—points by sum of multipliers.

Logs to show—Date. time G.M.T., stn. worked, sent no., received no., band, note of new multiplier. Summary for each band required. Separate logs for each C.W. and Phone. Also call sign, name and full address, finally signature abiding by rules.

Logs to be submited or mailed not later than 15 Oct. 65 to:—N.R.R.L. Traffic Department, P.O. Box 6594, Rodelokka, Oslo 5, Norway.

I.A.R.C. NEWSLETTER

The first newsletter of what is to be a quarterly issue from the I.A.R.C. has been received. News of interest to the W.I.A. will be published from time to time.

FEDERAL CONSTITUTION ALTERATION

Federal Executive, on behalf of the Federal Council of the Wireless Institute of Australia, hereby gives notice that it is intended to alter the **Federal Constitution of the Wireless Institute of Australia 1947** as follows:

(a) by adding the following words at the end of Clause 3 thereof: "and to form a Company to take over the real and personal property belonging to and to give an indemnity against all or any of the liabilities of the Institute and to pay the costs charges and expenses of such formation and to transfer all the assets of the Institute to such Company."

(b) by adding new Clause 67a after Clause 67 thereof as follows: "67 (a). Upon the incorporation of the Company referred to in Clause 3 of this Constitution, the Institute shall be dissolved and the assets of the Institute shall be paid and transferred to the said Company in consideration of the said Company indemnifying the Institute, the Council, the Executive and members against all costs, expenses and liabilities."

Any member of the Institute not in agreement with the proposed alterations should notify his disapproval with the reasons to the Federal Secretary within 14 days of the publication of this proposal.

RECIPROCAL LICENSING

Reciprocal licensing is now a reality! Just as this issue of "A.R." was going to press we have learned from the Minister for External Affairs that the agreement to establish reciprocity between Australian and United States Governments in the field of Amateur Radio has been concluded. Notes constituting such an agreement were exchanged in Canberra on 25th June, and will now enable suitably qualified Radio Amateur operators of either country to be authorised, by the administrative agencies concerned, to operate an Amateur Radio station in the other country.

Whilst this has been Institute policy for some time, it was not until the passing of the Goldwater bill in U.S.A. that serious attention could be given to this matter. Australian Amateurs now join Costa Rica, Great Britain and possibly others in having had this facility available.

THE "ISTOR" FAMILY

The following "istors" are published with acknowledgments to P. J. Hutchings from a recent edition of British Communications and Electronics. It may be remembered that a list was published a few years ago—add these new ones !

Barristor—majority carrier semi-conductor triode.
Binistor—silicon controlled rectifier.
Callistor—silicon controlled rectifier.
Cryosistor—low temperature semi-conductor component.
Deplistor—depletion type semi-conductor.
Fieldistor—field effect transistor.
Filmistor—film resistor.
Frigistor—low temperature resistor?
Gaussistor—magneto resistive amplifier.
Indistor—L/C network.
Indusistor—transistor circuit.
Madistor—magnetic semi-conductor component.
Magnistor—magnetic single junction device.
Memistor—self-adjusting resistor for adaptive memory.
Microsensistor—microminiature sensistor.
Negistor—negative impedance matching network.
Neuristor—neutron simulator.
Nuvistor—reliable valve range.
Optotransistor—optical transistor.
Oscillistor—magnetic semi-conductor oscillator.
Persistor—super conducting computer element.
Phototransistor—light sensitive transistor.
Polaristor—light sensitive transistor.
Precistor—precision resistor.
Resistor—resistance element.
Sensistor—thermistor.
Stabistor—voltage stabiliser.
Statistor—field effect semi-conductor.
Thermistor—thermally variable resistor.
Thyristor—silicon controlled rectifier.
Transistor—basic semi-conductor device.
Trigistor—silicon controlled rectifier.
Trinistor—silicon controlled rectifier.
Twistor—magnetic memory device.
Vamistor precision resistor.
Varistor current variable resistor.

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FEDERAL QSL BUREAU

The Korea Amateur Radio League has forwarded details of two new awards which they have recently sponsored. Full particulars may be had from this Bureau.

Resulting from the formation of a Radio Club, there are now many more OY stations on the air and further additions are expected. A total of 12 OY stations are now active.

The 11th European DX Contest staged by the D.A.R.C. is scheduled to take place as follows: c.w. 0000 G.M.T. August 14 to 2400 G.M.T. August 15. Phone 0000Z 11 September to 2400 Z 12 September. Full details of scoring, log preparation and awards may be had from this Bureau.

Divisional QSL Managers should note the following changes in the A.R.R.L. Bureau effective immediately:—

W4—F.A.R.C., P.O. Box 13, Chattanooga, Ten., 37401.

W7—Willamette Valley DX Club, P.O. Box 555, Portland, Ore., 97207.

The A.R.S.I. (India) and the R.S.C. (Ceylon) invite all Amateurs to take part in their jointly promoted DX Contest scheduled to take place as follows: c.w. 0600Z October 23 to 0600Z October 24; Phone 0600Z October 30 to 0600Z October 31. The object is to work as many VU2 and 4S7 stations as possible. The contest is also open to s.w.l.'s Full details of scoring, logs, and awards from this Bureau.

Ivan Thomas, VE8WT (ex-VK0IT) won the A.R.R.L. Sweepstakes Contest for the Yukon and N.W.T. c.w. section. He is running a HT37 and linear to a 4 el. beam and using a Drake 2B. Ivan will fly to KH6 around mid-August to meet his Sydney bride. After a second honeymoon in KH6 both will return to Yellowknife where his wife will be engaged in her nursing profession. Later they expect to move to the VE7 region.

—Ray Jones, VK3RJ, Manager.

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NEW SOUTH WALES

The meeting for the 27th of August will be given by Mr. Eric Tischler (from Ducon) and his subject will be on the latest trends and development in "Capacitors." On September 24th, Ted Whiting, VK2ACD, will discuss "Radio Links" and how they are used in point to point circuits. In October the subject will be "Magnetic Amplifiers" and the lecture given by Mr. Allan Morris (from D.C.A.), this will be on October 22. All these meetings will be held at the Wireless Institute Centre, 14 Atchison St., Crows Nest, and timed to start at 7.45 p.m. Interstate and overseas visitors are always welcome.

Once again it is round to the Remembrance Day Contest and this year it is VK2's turn to provide the opening address. This will be performed by the Director of Civil Defence in N.S.W., Major-General I. N. Dougherty. It will be broadcast in the opening ceremony of the Contest at or a little after 0745 G.M.T. on Saturday, the 14th, by all Divisional Broadcast stations. While on the subject of the R.D. may I suggest that all who take part, even if it is only to work the minimum number of stations, should remember to submit a log and help your State. (Refer to the N.S.W. notes in the v.h.f. section re the combination of the v.h.f. Group Contest and the National section.)

The Auction night, which was held in place of the June meeting, was well attended and "quite a bit of gear" changed hands. Frank Pearson, VK2ACQ, has been appointed councillor in charge of the country zone. Interest is being shown in VK2 to obtain "Call Letter" licence plates for cars in place of existing plates. If there is enough support shown a committee will be formed to approach the Transport Dept. If you would like to join this move, drop John VK2IQ a note via Wireless Institute Centre, Crows Nest.

The first sub-edition of the "Amateur Guide" Handbook is now out of print for the moment. Sub-edition number two is expected to be available late in August. This will be added to the existing book and bring it up to about 70 sheets. Further details later.

W.I.C.E.N. is being revived in this State and the Past President, Vic VK2VL, is now the State Co-ordinator. He is at work on

SILENT KEY

It is with deep regret that we record the passing of:

VK2OF—J. W. Francis.
VK2QC—J. L. Carter.
VK2AHF—R. H. Jones.
VK5JE—E. J. Cawthron.
VK6DX—Bill Barber.

plans at the moment and will report back to Council in the near future. It is expected that some use may be made of v.h.f. as well as h.f. to produce a workable system.—2ZTM.

CENTRAL COAST AMATEUR RADIO CLUB

The June 18 meeting of the Radio Club had 38 people present with Leon Brett and J. Daller becoming new members. There were also two visitors from Newcastle. The programme began with a short movie, in colour and with sound, on the construction and operation of the U.S. Mariner II. satellite which was designed to travel near Venus in order to collect information. This satellite travelled 180 million miles and then went into an everlasting orbit. Altogether it sent back 75 million bits of information which helped in the design of a manned vehicle.

N.A.S.A.—National Aeronautical Space Administation—has centres in many countries and 40,000 people engaged in the work. Computers play a very important part in the operations at these centres. Apart from the United States of America there are centres in Bermuda, Spanish Archipelago off the African coast, Muchet near Perth, Woomera, Tidbinbilla near Canberra, Canton, Hawaii, Guaymas, Mexico, and when required ships are placed in the Atlantic and Indian Oceans.

The highlight of the evening was the movie on John Glenn's epic flight through space in "Friendship 7" which took place on February 20, 1962. The build-up of tension was communicated to us forcibly during the count-down as John Glenn's heart beat was on the sound track and when lift-off came I think each individual heart beat a little faster. At the time of this flight it seemed a magnificent feat but because of the numerous flights since, people have become a little blase about space travel. However, this film puts it back in its perspective. Imagine, if you can, travelling four miles for each time your heart beats. That is the speed at which Glenn travelled—going around the world in 88 minutes for each orbit and having four sunsets in the one day. He travelled 81,000 miles through three days and three nights, in four hours and 56 minutes.

Glenn had trouble during his re-entry into the earth's atmosphere as the heat shield of his craft was loose and there was the possibility of his burning up in 3000 degrees of re-entry heat. It was a very worrying time and during this period the reflection of the flame was quite visible on Glenn's face. However, he was very calm and gave reports of what was happening but I'm sure he was a very happy man when he landed in the water 700 miles off the coast of Florida. He had to slow down to 1300 miles per hour from 17,500 miles per hour in two minutes and during this time he was eight times his normal weight.

There was a travelogue quality about the film as the various space centres were photographed in their natural settings which enhanced the feeling of world participation and interest. The Glenn film was a fascinating quick look at the years of work, worry and elation involved in sending "Friendship 7" aloft and well worth seeing again if the opportunity comes.

On Sunday, June 13, the Radio Club held a very successful Barbecue at the QTH of Phil Levenspiel, VK2TX. This is a hilltop location and the view over Wyong and Tuggerah Lakes to the Ocean is marvellous. It was a perfect sunny day and the 53 people who attended all agreed it was really good—so much so that requests were made for a repeat performance later in the year. Lunch consisted of large hamburgers and hot dogs with all the trimmings plus plenty of cakes, cookies, etc. Mona, VK2AXS, was the chef and Rene Levenspiel the dispenser of trimmings and teas. The charge was 5/- per adult and this allowed for many seconds and thirds. In the afternoon there were two transmitter hunts—one on two mx and one 40—both of which were won by Garry Tippett. We will have to make them more difficult next time. Geof. Warner, VK2CK, and his XYL from Brinjelly came along and also Tom O'Donnel, VK2OD, with his XYL and harmonics from Sydney.

Our meetings are held on the third Friday of each month and anyone visiting the area at that time is invited to come along to the School of Arts, Mann Street, Gosford, at 7.30 p.m.—Mona, VK2AXS.

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VICTORIA

VK3 Council met on 25th June, all members being present. There was not as much business as usual, in fact, the meeting closed at 10.30 p.m. Matters considered included S.w.l. Group rules, R.S.G.B. publications, membership lists, unfinancial members, W.I.C.E.N., S.w.l. Broadcast notes and net frequencies.

The S.w.l. Group rules as submitted did not meet with Council's approval, and have been returned with suggested modifications to bring them into line with our constitution. R.S.G.B. publications will be available from the Division. This decision was reached only after long deliberation, and a close vote. A surprising number of members have not paid their subs. These people will be excluded from the mailing list, hence no "A.R." or disposals. The Broadcast Committee was instructed not to accept any notes from the S.w.l. Group for Sunday broadcasts after 8 p.m. Saturday. This action is necessary to allow the announcer responsible for the broadcast to do any editing considered desirable.

The W.I.C.E.N. Co-ordinators outlined matters they proposed to discuss at the meeting scheduled for the following Wednesday, and obtained Council's approval.

OBITUARY

JACK W. FRANCIS, VK2OF

On Sunday morning, 27th June, another well-konwn Amateur, Jack Francis, VK2OF, of Molong, passed away.

JESSE L. CARTER, VK2QC

Jesse Carter, VK2QC, of Belfields (Sydney) died on the 14th June. Jesse had been the Divisional Librarian up to this year.

R. H. JONES, VK2AHF

On the 1st July we learnt that Bob Jones, VK2AHF, of Edensor Park (Canley Vale), passed away. Bob was one of the old timers and had been an active operator on 10 metres in the early '30's.

The sympathy of all members of the VK2 Division is extended to the bereaved families.

EDWARD JOSEPH (TED) CAWTHRON, VK5JE—ex-VK5JC—ex-VK2JC

The VK5 Division reports with sincere regret the passing on Friday, June 11, of Ted Cawthron, VK5JE, after a long illness.

Ted came to VK5 from VK2 in the early days of talking pictures as Raycophone sound technician, a position he vacated some years later to join the P.M.G. as radio technician, later transfering back to VK2 in the same capacity, from whence he enlisted in the Army at the commencement of World War II. Moving to Darwin he became a prisoner of war in Timor, Java, Changi, and spent 2½ years on the Burma-Thailand railway, where with his specialised Radio Amateur experience he co-operated with Colonel Dunlop and Major Swanton (the present well-known test cricketer commentator for the London "Daily Telegraph") in connection with secret radios, being Mentioned in Despatches for his work.

Returning to VK2 at the end of the war, he returned to VK5 some year or so later, still with the P.M.G., and spent some time at Woomera in connection with the broadcasting station there. He was at the Trainee Instruction School for the P.M.G. at the time of his illness. Amateur Radio in VK5 is the poorer for his passing, and the Division extends to his sorrowing wife Alice, daughter Patti and son Edward its deepest and sincere sympathy in their sad loss.

BILL BARBER, VK6DX

It is with deep regret we advise the passing of VK6DX, Bill Barber. Bill was associated with 5PI until it was taken over by 5AD.

Just after the depression Bill came to Kalgoorlie, set up in business on electrical and radio work, and for the past few years has had it looked after by his son Bill.

VK6DX was a household call in the early days and only this last couple of years he has had to take it easy. He had been in and out of hospital on several occasions. Only 3 weeks ago his wife Sis passed on and that no doubt had some bearing on his stay in hospital ending in his death on June 30.

Our sympathy goes to his son and daughters.

A likeable type indeed —So long Bill.

The W.I.C.E.N. meeting was held on 30th June to outline the exercise planned for 3rd and 4th September. This is to be a major effort needing about 80 participants. The area of operation will cover a large part of Victoria. For the purpose of the exercise, headquarters will be established in Bendigo. Relay stations will be wanted around Bendigo to maintain contact with mobiles. The problems to be faced were outlined, and suggestions invited on methods to be used to solve them. Although some ideas were submitted, not all problems were covered. It is hoped those 40 odd who were present will think the matter over for the next few weeks and contact 3OR, 3AFQ or 3ZEL. Volunteers for some jobs will be on the you, you and you system, others have the chance to nominate which job they consider they can manage best, with no guarantee they will get the job they select. So briefly, that is the position. Get your name in early and help make this exercise a roaring success.

Before going any further I must correct an oversight of last month. Somehow our worthy Secretary was omitted from the list of office-bearers. So to set the record straight:

Hon. Secretary: Ken Seddon, VK3ACS.

(How's that, Joan, am I back in favour?)

July General Meeting was held on 7th June to a capacity audience. Syd. 3ASC brought along some new National equipment for the boys to drool over. Using block diagrams he outlined the various stages of the NCX5. He really took the wind out of our sails when he tabulated the taxes, etc., paid on imported equipment. How much more s.s.b. equipment would be in the hands of the boys if the taxes, etc., were removed is anybody's guess, but with the price almost halved it would be a vary attractive proposition.

Next month (August) we are to have a White Elephant Night and at the September meeting we are to have a demonstration and lecture on Lasers by Mr. K. Gibbs, of Defence Standards Laboratories.

PIRATES CAUGHT

The Melbourne "Herald" of 7th July reported that twin brothers, aged 26, had been fined £5 and their "ham" equipment valued between £250 and £300 confiscated. Evidence revealed the equipment was an Army 122 Set, illegally used to talk to a girl in Brighton.

In view of the fact that 122 Sets are worth only about £12 to £15 cash and the maximum penalty for this type of offence is a fine of £200, we feel they got off with a very light penalty.

We consider it unfortunate that the report by the Herald referred to "ham" equipment, as it gives the general public the wrong impression, thus negating much of the work done to raise the Amateur's status in the community.

We also consider that the sale of transmitting equipment to anybody not holding a licence, should be an offence under P.M.G. regulations, in short, any steps taken to stamp out illegal operation would be worthwhile.

WESTERN ZONE

Unfortunately the conditions will not favour VK5 on 80 metres but still the zone hook-ups struggle on, with good signals from the more distant stations 3AKW and 3EF. Herb 3NN is apparently operating but is unable to be heard on the Coorong—better yell at bit louder Herb!

Colin 5ZEV has migrated north, to avoid the cold, and eagerly expects the call 9EV. Hope to hear you on 20 mx soon, Colin. Tony 5ZAI had quite a bit of fun recently with his satellite tracking station bringing Amateur Radio to the foreground of a local newspaper. Fine business Tony and a good advertisement for our hobby.

The Keith area school has had to recess its Radio Club this year. The problems of staff shortages have proved too much with the addition of regular teaching and bus driving for the club's tutor. However, interest is still booming and a group will visit the Annual Zone Convention as usual.

Barry 5YB has had to QRT due to alterations of board on the school bus terminus. It is expected that another shift at the beginning of August will allow the "motor-driven 12 volt 100 watt" rig to burble forth once again. Apologies to all the Adelaide boys who objected to the sub-standard audio emissions whilst portable with this rig at Mitcham. Remember, we are normally 30 miles from the nearest a.c. and that is a 132 k.v.a. supply I wonder how the "townies" would be without their 240?

It is hoped that some v.h.f. portable conventions can be organised from Keith and environs during the spring. Contacts will be sought on 2 and 6 mx. Hope to hear 3NN, 3ZEA, 3ZOS and a host of other Western Zone members on these occasions.

How did the visit to the big telescope at Parkes go? It appears that we were represented by Trev. 3ATR and Ray 3ATN who had an "open day" at that site. No doubt that Bill 3AKW is "settled in," having returned to work following his long service leave.

I'll have to hand it to PanSy once again—he beats us all. Looking forward to seeing you all at the Convention. 73, Barry 5 Yogi Bear.

MOORABBIN AND DISTRICT RADIO CLUB

The June general meeting was held on Friday, 18th June, at the usual time of 8 p.m. After a bit of a chin-wag, the meeting proceeded and business speedily dealt with, as all present were looking forward to a talk by Fred 3ARK on the finer points of how an aircraft becomes airborne and why. Fred was able to make the talk easily understood by producing a slide projector and some very interesting slides. After explaining the finer points of basic flight, Fred concluded with generalities of flying and from the number of questions all present thoroughly enjoyed the talk. I believe Fred is seriously considering becoming aeronautical mobile one day, so we all look forward to this rare bit of DX. Another member of the club is a flying type, Don 3AKN, down at Broadwater.

Our June practical night was taken up with putting the club transmitter on the air, much to the enjoyment of our junior members. The club at the moment is engaged on a fund-raising scheme, to purchase a projector. Newspaper collecting will be the main source of revenue together with any donations or otherwise to aid the funds. After this is procured, it is hoped to resume our film programmes which were usually held to conclude our general meetings.

National Field Day for 1966 was discussed at the May meeting. After a lot of discussion, it was agreed that again several teams would be fielded rather than the club as one team. It is expected that teams will be organised by Jack 3VT, Bob 3ZRD, Ron 3RN, Alf 3LC, with a few more under consideration. In anticipation of Field Day, Harold 3AFQ recently acquired an alternator, well, I mean pieces of an alternator. A team of volunteers, headed by Harold, ascended one quiet Sunday morning on to a house to pick up an alternator complete with motor. As it turned out, the alternator was in half a dozen pieces and the motor, well we lost count of all the parts. At least it was all in one massive box. A very enjoyable afternoon, the following week-end was then spent by Harold and Val 3OT trying to sort out the jig-saw puzzle, anyway, Harold, you still have about seven months before "F" Day.

Whilst still on Harold's segment, he would like me to mention our circulation list. Any member who was not listed correctly in our latest list of members, dated 15th June, 1965, is requested to either drop a line if any alterations are called for, or see Harold at our next meeting. Occasionally errors somehow or other manage to creep in, like the time Harold was referred to as the "Honourable Secretary."

Brief mention was made in our notes last month of members who intended to attend the VK5 South Eastern Zone Convention at Mt. Gambier. Lindsay 3ZNS, Ken 3ZNJ and Fred 3ARK made the grade, and from all reports, thoroughly enjoyed themselves.

Morton 3ANG opened up the other night, didn't know that I was taking notes for the purpose of this column, he spilt the beans. Tells me he is in the process of Channels A and B installation in his MR 10, and what is more has courageously mutilated the roof of his brand new car for a whip. You have now joined the ranks of the "few." Morton also told me he is active on 160 metres and has a 2 metre rig on the drawing board. Looks like this end of town will shortly become fairly active with club members on two.

Why even Hal 3ZOO is back in town, oh, I mean back on two. Must turn my rig on again to hear just who is on. Lindsay 3ZNJ is quietly working on his mobile rig, one of these days he is going to pop up and surprise us all. Whilst on the subject of Lindsay, yours truly was rudely awakened while engrossed watching the one-eyed monster the night prior to Lindsay's departure for VK5 for the convention, to lend a hand to install a two metre f.m. rig in his car. There on my front doorstep I saw it. A car, complete with a genuine quarter wave ground plane perched on the top of a pole mounted on the front bumper bar. After a few adjustments Lindsay parted on his way with the "thing" waving madly in the breeze. Must ask Lindsay one day if "it" made the distance, well at least it would be a good landmark. Noticed Lindsay was clean shaven last meeting, must have borrowed a razor.

David 3ZOP has a new QTH at Oakleigh, with plenty of room, in more ways than one. Harold 3AFQ is sporting a new antenna on two f.m. A five half waves in phase, and it really works. A report was recently handed to me that Ken 3ACS has carpeted the floor of his shack. I am not too certain of the authenticity of this report, just does not seem correct. A carpeted floor, have to make a few more enquiries here, what are the ranks coming to, a bunch of softies. As it was, Ken had a polished wooden floor. Gee, some blokes I know haven't even got a floor. And another thing, my spies tell me that Ken is seriously thinking about purchasing a commercial sideband rig. Enough said.

Jim 3KE is still bulding his sunroom, and still has snails in his fish tanks. Keith 3AKB is at the time of writing enjoying an aeronautical holiday in VK4 chasing the sun. Another member who has migrated north is Alf 3LC, who is spending his annual leave in VK4. And yet another, Bob 3SK is also in VK4 enjoying the warm weather.

The club issued its first S.w.l. Award recently to L3229. S.w.l.'s interested in this Award can obtain information from club member Greg Earl, L3138, enclosing a stamped addressed envelope.

The August general meeting will be held the third Friday in August at the club room, any further information on this or club activities can be obtained from Harold 3AFQ. 73, Peter.

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QUEENSLAND

The monthly meeting of the Council of the Queensland Division of the Wireless Institute of Australia was held in the Social Service Rooms, Berwick Street, Valley, on Friday night, July 1. Laurie VK4ZGL was in the chair, and there was a good attendance of Councillors. Al VK4LT is recovering from 'flu and was not present. Mr. Max Klinger and Mr. Jack Dearlove, of the Queensland Surf Life Savers' Club, came along to discuss communications for their big Easter Surf Carnival at Gold Coast, and Councillors were able to assist greatly with advice and recommendations, which solved all of their problems.

W.I.C.E.N. REPORT

A net frequency is to be established for the high frequency net and this will be decided later. All matters are proceeding along according to plan.

JAMBOREE-ON-THE-AIR

This will be held over the week-end 16th to 17th October, 1965. Since 1965 is International Co-operation Year, organised by the United Nations, the Boy Scouts World Bureau proposes to dedicate this 8th Jamboree-on-the-Air to international co-operation and to invite other youth organisations to participate.

QUEENSLAND SUNSHINE STATE CONTEST

This will be held on 10th-11th July. Full details are in QTC which is now in your hands.

YOUTH RADIO CLUBS

The Y.R.S. have an urgent need for earphones, both single and double, and also tuning condensers (one or two gang), so fellows, please dig into your junk box and see what you have, and pass on to any of your Councillors.

CENTRAL QUEENSLAND AND WIDE BAY AND BURNETT BRANCHES

The Central Queensland, Wide Bay and Burnett Branches held a successful Wireless Institute Convention at Tannum Sands on the long week-end, June 12-15 inclusive, in which 80 members and visitors took part. On Saturday equipment was set up and a Fox Hunt for a hidden transmitter was held.

During Sunday, Rockhampton Amateur, G. Fox, VK4FK, secured the most contacts in an "all-band scramble." He also contacted the most distant station and thus won two prizes for his effort.

V.h.f. enthusiasts conducted three more Fox Hunts and W. Sebbens VK4ZWS, a winner on Saturday, won another two and L. Dobbs VK4ZLO the other.

A tape recorded lecture was given by T. M. Nolan, VK4FN, on a transistorised transmitter.

Children took part in a penny hunt and of 100 buried in the sands all but 11 were found. It is suggested that the Convention be held in the same place next year so as to try and recover the pennies next year, as with the introduction of the decimal currency, pennies may again take on real value, hi.

A Barbeque on Saturday night was followed by a lecture on Receiver Design by Mr. Hazzell, followed by a film programme.

Another All-Band Scramble and V.h.f. Scramble was held on Monday. Prizes for which were won by J. McGrath and L. Dobbs respectively. J. Lyle VK4ZLD successfully judged the frequency of a tuned circuit on display. There was a splendid display of home brew equipment and prizes were won by the following: R. J. Hazzell (Rockhampton), 1; K. Chiperton, VK4ZKC, 2; W. Sebbens, Bundaberg, 3.

IPSWICH AND DISTRICT AMATEUR CLUB

This club is one of the most progressive Amateur Radio bodies in VK4. They have now acquired a piece of real estate on which they hope to erect a shack and install the Club's Amateur equipment. Besides the h.f. station they also have a six-metre base station, and operate on the net frequency of 53.032 megs. Many of their members operate mobile and have their converted taxi-phones working on this frequency.

The Club held a 150-mile round tour over the Queen's Birthday week-end. Round through Toowoomba and home, and all had a f.b. time.

They have just completed their third year of activities and have a big programme lined up for the next 12 months.—Reg. VK4UX.

TOWNSVILLE AND DISTRICT

There is no doubt about it, wonderful sunshine in sunny North Queensland. There was I showing my visitors the glorious view from the top of Castle Hill in the middle of the town. Beautiful Magnetic Island so close and in the distance is the Palm Island, when I spied a car sporting a whip wending its way up the hill. On leaving my vantage point I met the driver who turned out to be Bill VK5FR all the way from South Australia, he being in contact with Dave VK2BZ, both working mobile. So it was good to meet after being friends on the air for such a long time. Dave was in the preparation of leaving the car park to visit Magnetic Island. So took the opportunity of meeting him also as he stepped aboard. Bill was wending his way back home and Dave was on his way north. Believe there are others in the district but to date have not made contact with them. All you tourists don't forget to call or let us know your movements, we all would like to see you.

Ted 4EJ now sporting a fold over tower and busy getting the Quad back in action. Glad to report that Merv. 4ZMD has been allotted the call sign of 4DV and busy working the DX—6 new countries in 6 QSO's.

Glad to read in this morning's paper that we now have reciprocal licensing with the U.S.A.

Now wouldn't it be a fine gesture on our Government's part to allow us to work the boys in the armed forces overseas with third party traffic. It would be a great morale booster to them. Perhaps Federal Executive could look into this matter.

Congratulations and best wishes to Bob 4MF on his recent marriage. Maybe now will be able to get some spare time to get on the bands 'once again.—73, Bob 4RW.

BACK ISSUES OF "A.R."

We have a limited quantity of back numbers available at 1/6 per copy post paid, or 1/- each if collected. If your files are not complete, write to the Secretary, W.I.A., P.O. Box 36, East Melbourne, immediately. The copies available are:—

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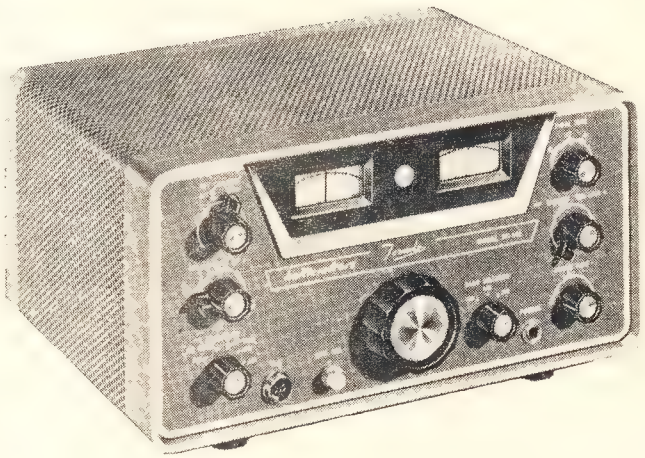

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SOUTH AUSTRALIA

The monthly general meeting of the VK5 Division for June was held in the spacious and commodious clubrooms to a capacity audience, another public phone booth-filling record if ever there was one (see VK3 monthly notes for June—paragraph 4) and took the form of a jumble sale, a popular form of entertainment in VK5.

The genial chairman, Ross 5KF, opened the meeting right on time and suggested that the minutes of the last meeting be taken as read, a suggestion that met with enthusiastic approval from all present, and after Federal correspondence was read to the meeting, everybody settled back for the piece de resistong, to wit, the jumble sale.

However, such was not to be. Chief trouble maker for the Division (Council's name for him, not mine) rose to his feet and brought up a matter of contention, purely to get it into the minutes for discussion later, to be rapidly followed by Dave 5DS and Vern 5VB who asked some pertinent questions on matters appertaining to the Journal questionnaire and the possible raising of the subscriptions, both appearing to be satisfied with the replies, although methinks that the matters will not rest entirely at that. No reference is made as to whether Chief trouble maker was satisfied with his reply, and again methinks the matter raised will not rest entirely at that.

At long last the proceedings, compered by Brian 5CA commenced, and assisted by Phil 5NN a determined attempt was made to extract the shekels from the members' pockets, and if I may add in closing, with extremely satisfactory results.

Jumble sales, as I have commented before, do not lend themselves to any degree of "padding," expert though I am reported to be, and I reluctantly am forced to conclude the report of the meeting by saying that a good time was had by all, and when I say that the meeting ran twenty minutes over time, I feel that justice has been done.

I left before the caretaker arrived with his Alsatian, but from enquiries made later I am given to understand that no more than a couple of growls from the Alsatian were necessary to close the unofficial meeting, and with the chilly conditions existing outside the clubrooms, no time was lost by the members in retiring to their couches of virtue, there to sleep the sleep of the just, or what passes for the sleep of the just among Radio Amateurs.

Bert 9M2AF was among the visitors and tells me that he has returned to VK for good now and expects to take out a VK5 call in the near future. Welcome, O.M.—you have picked out the best Division without any doubt. Cheers and jeers from the Wise Men from the East.

Another visitor, quite unexpected, was Jack 5JD home for five months' leave after tripping all over the world as radio op. on various vessels. His greeting to me was typical: "How about you and I having one of our old-time box-ons." To think that such wickedness could be! Me box-on? Just because Council calls me names, everybody thinks I am looking for a fight. P for Pansy—P for Peace—What more can I say?

Could not help but notice that Phil 5NN during his sojourn at the auctioneering table, managed to get one back on me. He was offering a portable aerial for disposal at the time, and looking straight at me he said, "All it wants is a couple of guys to hold it up." "Any old guy will do." Just what did he mean?

Talking of Phil 5NN and who wants to talk of him? Anyway, I have it on the best of authority that he will be writing the S.S.B. notes for the magazine in the future. I have said it before, and I will say it again, Pincott 3AFJ will stop at nothing to thwart me, and this is only another of his schemes to make it awkward for me. I should complain to the new VK3 President, whoever he may be—but I won't.

Noticed an old pair of headphones with thick rubber ear cushions on them go up for sale at the meeting. One of the audience said audibly, "What could one do with them?" A wit in the back row said, "They would be good to wear in bed on pay night when the XYL started to quiz on what happened to the pay packet that day!!"

Vern 5VB, the Admiral to you, spent a very pleasant fortnight or so at the QTH of his son-in-law Brian 5BI at Cowell recently, and the fish were biting well—if he can be taken as an authority. He told me of the sad, sad incident when his XYL was helping him to launch the boat down the ramp, and everything slightly slipped a foot or so and the XYL finished flat on her back in 18 inches of water. The tears were running out of his eyes as he told me. Poor fellow, he was terribly upset. I thought he would have a fit in series parallel before he finished telling me. True as true.

Brian 5BI has in the past achieved some notoriety in these notes because of the antics of his pet kitten. Rumour has it that his 18-months-old harmonic has decided to get in the act and was discovered the other night, mainly by the noise kicked up by the kitten, pinching the fish heads and bones from the kitten who had just put his serviette on for the evening meal. They bring them up tough at Cowell.

Dave 5DS, my favourite Scotsman, just returned from a seven or was it nine weeks' vacation to Perth. Thoroughly enjoyed himself, and whilst there called on Len 6LG who sends his 73 to all of his friends in VK5. It is not generally known, but Len is a VK5 member, and a very staunch supporter, too. He sent his usual congratulatory message to the writer of these notes—on asbestos—for which I thank you Len, keep up the good work, O.M.

Met Ivor 5IT the other day, and he does not look a day older. Probably not very well known to the present membership, but is well remembered by those who attended the early meetings of the Division just after the end of World War II. I think I can say, without fear of contradiction, that he did as much or more, than most of his contemporaries of those times, to put the VK5 Division on the map, and right from scratch at that, no finance, no meeting rooms, and even no membership, and his period of Presidency was an arduous task which he carried out with an efficiency for which he has always been noted. I broke into Council under his chairmanship, and I could not have served my apprenticeship under better training. Nice to meet you again O.M.

Charlie 5ON is now the proud owner of a Galaxy III, a present from his XYL, and is as proud as a canary who can hit high C. I tactfully mentioned the matter to my XYL, but the only result that I got was the presentation of a tea towel and instructions as to how to wipe two plates as one. Woe is me.

Jack 5LR is at the moment of writing making a welcome return back to the air after an absence of four years or so. He is in the throes of getting his s.s.b. rig to s.s.b., but the rig is proving a litfle coy on the subject. One minute he is one of Comp's mob, the next he is one of my mob, and until the rig makes up its mind just to whom it will pay homage and allegiance, life is a little teejus.

Lloyd 5OK was another welcome member of the audience at the meeting, some time since he was last seen at a meeting, but is still quite active on the air, mostly mobileering, and very happy with his results to date.

My one-time sparring partner from the land of momentous decisions (Ken 1KM) who incidentally has been treating me with studied ignore, will be pleased to know that the VK5 Division has appointed Bruce 5OR, John 5UL and Wally 5ZEH to form a committee which will be responsible for the administration of the W.I.A. Youth Radio Scheme in VK5. Now steady Ken, bear up O.M., you must learn to accept exciting news, no matter from whence or where!

I note with interest in reading the v.h.f. notes in the VK5 Journal by the "Voice of the Hills (5ZEJ)," oh, yes, I read them with interest, and also in the hope that he might one day make a mistake which might have possibilities of libel, anyway I note with interest that Wally 6ZAA and Jim 3ZDW have been visiting our fair city. Jim was on his honeymoon, and if I might be permitted to say so, his bride was a charming young lady. What's that?—when did I meet them—well, to be quite true, I didn't, but aren't all brides charming young ladies? Never miss a trick Parsons they call me!

Uncle Tom 5TL by the time these notes are being read, assuming that they are ever read, will have in his cabin, not by the river, supplies of the R.D. log sheets, and if you cannot contact him personally, send him a large addressed and stamped envelope, and without doubt he will be overjoyed to forward your requirements. Be sure to put the stamp on the envelope, Tom never goes near a Post Office, he is allergic to them!

The new Associate members' representative is Ron Hinks, who can be contacted at the meetings or at 12 Penang Avenue, Colonel Light Gardens, so trot our your queries or problems and he will needle Council on your behalf. Poor fellow, they will soon be calling him some nasty names, they do me!

Also noticed in the Journal that Bruce 5MC is moving his QTH. Don't know just whether he is moving away from Port Pirie, or just moving to another part of the town. Possibly the budding authoress will enlighten me one day.

Talking of new QTH's, I have a new address. I now am to be found at 144 Fullarton Road, Rose Park. Don't let it throw you. The baronial mansion (Gordon 3XU please note) is still on the same block of land, only the street name has been changed to protect the innocent.

I see from the Federal comment that it is intended to hold next year's Convention in Brisbane. Remind me to ask Geoff. 5TY, our genial Federal Councillor, the t.v. type, if he will be so kind as to bring me back a bunch of bananas on his return from the Convention. Possibly by then VK4 will have discovered a method of growing them straight. Possibly!

Nobby 5WK has recently left his place of employment and is now on the staff of the Best Broadcasting station in VK. He seemed a little terse when I asked him how he justified his loyalty to s.s.b. by working at an a.m. broadcast station. Strangely enough he was out in one of the mobile cars soon after he started, and believe it or not, the final tube of the transmitter in the car gave up the ghost. When I suggested over the base microphone that it was probably a little s.s.b. sabotage, he was stuttering with rage when I changed over. They don't fool me, I know the tactics of these s.s.b. jokers. Comps 5EF please note. Or should I say Comps (pro 5PS). You Beaut!

Talking of Pro 5PS—and who, I repeat, who would want to talk of Pro 5PS—I think the time is opportune to thank the three people who acted as Pro 5PS during my annual vacation. Phil 5NN and Geoff. 5TY in the weekly notes in the "Advertiser," and Comps 5EF who so nobly carried the war into my camp for two issues of the magazine. As warned by me, Comps' propaganda for s.s.b. had to be read to be believed, in fact it will take all of the next ten issues of "A.R." for me to make up the lost ground, and as for the two reporters for the "'Tiser," they outdid my humble efforts to such an extent that the subs' room at the paper suggested that they should continue with their efforts. Anyway, many thanks O.M.'s, although I often wonder if it is worth it to take annual leave with all the ground I have to pick up!

Incidentally, Doug 2DQ relayed a message to me via Ron 5KS—I think it was Ron—to the effect that the notes in the mag. had never been written better than in the June issue. No doubt about it, these s.s.b. jokers stick together. Anyway Doug. thanks for the flattery. I will do the same for you one day!

One of my best spies tells me that Tom 5TL, Uncle Tom to you, came home from work the other Saturday to find that his cabin was surrounded by water, and was forced to turn plumber on the spot. Understand his efforts in that direction were quite a success, things coming back to normal in the kitchen that afternoon, although his XYL still finds it difficult to accustom herself to flames coming out of the tap in the sink, and water bubbling up through the gas jets. Do it yourself Tom, they call him.

Harold 5ZAB of Renmark, bewailing the lack of Amateur Radio activity in the river towns. Apart from Hughie 5BC and Harold, the activity is at an all-time low. There was a Z call listed at Waikerie, and 5LE at Galga, but aside from this nil. Harold, by the way, has acquired a b.c. ticket recently.

George 5CV has gone holidaying, rumour has it to Benalla, but then you know George. There will be lots of silence around Henley Beach in his absence.

Jim 5JK has been on the sick list again with shingles. I told him that he was neither fish nor fowl, neither s.s.b. or a.m., but s.s.s. He nearly had a return of the shingles when I told him s.s.s. stood for Shingle Short Sullivan!

Had quite a surprise the other night. Ear wigging on 7 Mc. I heard Athol 5LQ confess to being a grandfather of some two or so years' old. Tricked me, I would have expected him to be the proud father of his first, he looks young enough. Must have lived a blameless life.

This new system of submitting the notes with an inch all round has me tricked, I can't tell when to stop, and I would hate to be accused of talking for talking's sake! Anyway I sure will know all about it when the issue of the mag. arrives!

Everybody was surprised and shocked to hear of the passing of Ted 5JE, although it was well known that he was far from well. I have not seen much of Ted these past 20 years or so, but prior to that when he was the sound technician for Raycophone and I was a projectionist at one of the city theatres, we were the best of friends. I well remember one night Ted came to visit us at Henley Beach, and after the evening meal we discussed a transmitter that I was thinking of building in the next year or so. Ted asked to see the junk box, and before I knew where I was, he had the soldering iron flat out, and with suitable substitution of parts, had built the darn thing by four o'clock in the morning, despite the sour looks every hour or so from my XYL. This incident symbolises Ted's atti-

tude towards Amateur Radio, and even professional radio for that matter, and his fanatical interest at times in his favourite band of 40 metres, was the main thing that kept him going towards his goal of DXCC Award for 40 metre c.w., a certificate that he was so very proud of. Ted has gone, but his enthusiasm for his beloved Amateur Radio will live on, although his type of Amateur are becoming rare these days —more's the pity.

Well, I can't finish the notes on such a sombre tone as that, so will have to tell you that in view of my well-known shyness and modesty, it is not generally known that I am very interested in the arts, music and poetry. So much so that in my wanderings through the country towns on my vacations, I am often to be found in familiar places admiring the poetic efforts of the local inhabitants written on the walls and other strange places. Most of what I read leaves me cold, but recently I came upon a beauty, written by a philosopher somewhat like myself, and I take the liberty of quoting for your benefit:

He who loafs and fools about
Will surely be sacked when he's found out
But he who works and does his best.
Will get the sack with all the rest! ! !

73, de VK5PS (PanSy to you).

— . . . —

WESTERN AUSTRALIA

Before I go any further, don't forget the R.D. Contest. Tune up the rx's and tx, become enthusiastic and get cracking, be in readiness. Remember, what the day is for, that is, to commemorate the memory of those Hams who paid the supreme sacrifice in world conflict.

Noted a brand new call sign, 6XY, and a very nice signal too. Congratulations Aub., and welcome to the Amateur bands. Aub. has already achieved some f.b. reports from his tx and Joy Stick antenna, on at least three bands, also note that 6XY is armed with 6 metre equipment, so before long there will be much activity—between Wickepin and Narrogin. Speaking of Narrogin brings to mind that we have not as yet heard Karl 6XW on the breeze yet. I do hear that 5DN is now in the city of Kalgoorlie and very soon to have a VK6 call. Welcome to the Sunshine State, in spite of rain dominating at present.

Well chaps, I do hope these notes on reading are not really hard to follow, well, at least, not as hard as they are to write.

On or about the 1st July I heard a s.s.b. station calling 6KN, and it was quite a surprise to hear Noel 6MF after a long spell. Now back on the air running a very solid signal from Geraldton, another s.s.b.

Activity on 15 metres does seem to be on the up and up, quite often I hear VK's and occasional JA's. Noted JA stations have been very solid over the past mnnth in 80 metre band about 3550 Kc.

Some time ago Wally 6AG built a new shack which was to be lined with fly-wire, it seems that the r.f. is unable to get out Wally, as we don't hear you any more on 80.

What has happened to all the old-time gang, 6CL, 6CW, 6PH, 6TK and others? Surely, conditions on 80 and 40 are not all that bad? The rag-chewing is not what it used to be, along with heaps of humour; although one can still find Bob 6RG, Les 6WL doing their bit on 80, also running exclusive sideband; I should talk, after being absent for about four months, although I have been occasionally listening.

One thing we can depend on each Sunday, and that is the W.I.A. news service via Bob 6BE, being able to get out on 40, 80 and 6 metres, followed by 6GH George (6WI) portable with his technical discussions which are always very interesting, and I feel sure many of the listeners gain a great deal of knowledge.

Today, we at this QTH had the company of two very close friends of ours, Graeme 6GR and XYL Joy, the two newly-weds, they are returning to Perth after a stay in the country area. We all hope that you will both be very happy, Graeme and Joy, but don't forget "DX before dishes."

Bill 6WY has produced a rather minute s.s.b. rig which I think could be a very unique mobile unit. It is certainly quite effective when on the air. Congrats. Bill.

Well folk, that's about the sum total for now, so until next issue, 73, 6KN.

VK6WS — 91st BIRTHDAY
18th July, 1965

It is with pleasure all VK stations and VK6 in particular send greetings to Skipper on reaching his 91st birthday.

His title "Skipper" was instituted when he had a launch on the river and had pleasure in filling it up with other Amateurs. He fitted it up with a transmitter and worked other West Australian stations.

Skipper Schofield obtained his licence thirty years ago and was active on 80, 40 and 20. A few years ago Skipper lost his eyesight and even after that he returned to active radio work, but gave it up only a year or so ago.

He was president of both the Wireless Institute (W.A. Division) and also the old Subiaco Radio Society. He is a life member of both, also a life member and until lately a Vice-Patron of the Royal Freshwater Bay Yacht Club.

Skipper has been a Justice of the Peace for over thirty-six years.

— . . . —

TASMANIA

The VK7 Division is joining battle in the R.D. Contest this year to win. Your support and duly submitted log is the only means by which the R.D. trophy can return to Tasmania, so, quite obviously, each of us has the responsibility in this matter. Best of luck, chaps.

Geoff. VK7ZAS has been on the mainland for three weeks, mostly in Sydney, enjoying a well-earned holiday, and at the same time seeing his son Ian graduate out of his course in the Navy. Hence, I inflict myself on the unsuspecting public in Geoff.'s stead. Ted VK7EB is on long service leave, and spent three weeks in VK3 during July.

Hobart has had several visitors of late, Winston VK7ZWN, Bruce VK7ZBL and Beaven VK7BW, as well as Les VK3AAO. Les spent a couple of weeks in VK7 in July as the guest of Harry VK7BR and his XYL. The winter DX season on the six metre band was most disappointing this year. I have heard only of one opening, and that was to VK5. On the credit side of 6 mx. activity, the Hobart boys are delighted that they can work through to Mike VK7ZMW now on the air in Huonville. Another Mike, VK7ZMK is journeying north for a sojourn of six months as from the beginning of July, at the direction of his employer but we welcome back to Hobart David VK7ZAY, returned also from Mount Barrow to Hobart at the direction of his employer.

S.s.b. is always in the news these days. I hear that three further stations are tooling up for conversion to duck talk, namely, Bob VK7OM, Jack VK7JB? and Keith VK7RX. It is quite apparent that a.m. will soon carry the significance of Ancient Modulation, as predicted by the first s.s.b. operator in VK7, namely VK7LE. 73, Ian VK7ZZ.

NORTHERN ZONE

I am not very well up on happenings this month due to the fact that I was out of circulation for a while in hospital. However, this is part of what has happened.

An invitation was issued to members of the Zone to attend a lecture concerning electronics in seismology. Although the number of members who attended was disappointing, those who did make it found this a first-class lecture, delivered by a most able lecturer.

A new station appeared on the v.h.f. bands this month, Frank 7ZFR. Not unexpected, at about the same time our W.I.C.E.N. Co-ordinator, Harry 7BR, temporarily forsook 80 mx and came up on 2. This helped the northern activity quite a bit and it seems to have reached an all-time high for a non-DX season with the re-appearance of Ted 7BB.

As well as this there are reported to be others around town who are building rigs for this band, so it looks like the north is in for some real 2 mx activity.

A mid-winter opening occurred on 6 mx. This year the only station to work any of the DX was 7ZMH, who worked a VK4. 73, 7ZLP.

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FOR SALE: Prop. Pitch Motor, ideal Beam Rotator, new and unused, £10. Phone Business 42-3467 or After Hours 92-6218. Melbourne.

FOR SALE: "Topaz" 12 v. Power Supply, £35. Set of 4DA whip antennas, £15. VK4MF, R. Britton, 5 Gordon St., Garbutt, Townsville, Qld.

FOR SALE: Tower, counter-balanced, fold-down, rotatable, free standing (guys not needed). Used for 6 mx Quad and similar. Located at Nunawading, £10. VK3GF. Phone Croydon 3-3596 (Vic.).

SELL: AR7 Communication Revr.. A1 order and complete except two l.f. coil boxes. £27/10/- or offer. Also 500, 400, 100 and 1000 Kc. xtals, new, ½" spacing, £2/5/- each. VK4SS, 35 Whynot St., West End, Brisbane, Qld.; Phone 4-6526.

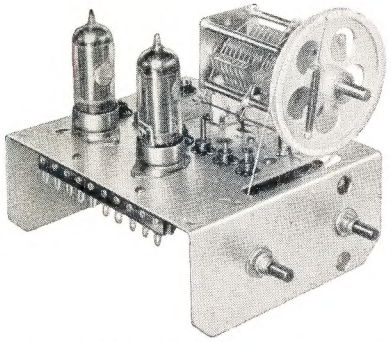
SELL: 230 volt, rack mount power supply. Fully fused and metered, h.t., l.t., bias, built for Collins S line, suit most s.s.b. transmitters, £25. Shure 401A mobile microphone, new, £6. VK3AHT, 314-6760 (Vic.), weekends only.

WANTED: Buy or Borrow: Operating Manual or circuit diagram of No. 109 and No. 38 Transceivers; will pay postage, etc. I. Ralph, 5 Colwell St., Kingsgrove, Sydney (50-7351).

WANTED: C.D.R. rotator and control, new or used. VK3ZNY, Mr. P. M. Crane, 8 Separation St., Mornington, Vic.

WANTED: Prop. Motor. Price to VK5GD, G. C. Ramsay, 8 Selby Street, Kurralta Park, South Australia.

GELOSO V.F.O.



Model 4/104 V.f.o. Unit. Tunes 80, 40, 20, 15, 11 and 10 Metres. Uses 6CL6 and 5763 Valves. **Price** (Valves Extra) **£10/18/6** plus 12½% S.T.

Model 4/102 V.f.o. Unit. Tunes 80, 40, 20, 15 and 10 Metres. Uses 6J5G, 6AU6 and 6L6 Valves. **Price** (Valves Extra) **£10/18/6** plus 12½% ST.

Notes on Circuit Application of Geloso V.f.o. Units available upon request.

All **Geloso V.f.o. Units** are supplied complete with calibrated dial, pointer and perspex escutcheon.

WORKSHOP EQUIPMENT

"BECON" Chrome Vanadium quality Radio Mechanics' Tool Kits. Comprise assorted screwdrivers, rasp, file, probe, pliers, small wrench, steel rule, etc.

Price: £3/5/-

NEON TESTERS, 240V. A.C. 6/6
NEON TESTERS, 500V. A.C./D.C. Car ignition, X-ray, T.V. sets, etc. 8/6

"ADEL" Nibbling Tool, cuts holes in sheetmetal to any size, any shape **£3/15/-**

"Bench Mounting Sheet Metal Bender." Make your own chassis. Folds angles from 17 deg. to 85 reg., 18 in. long. Forms chassis from ½ in. to ⅜ in. to 18 in. x 16½ in. Makes channels ½ in. upwards by 18 in. long. Z sections, decorative trims, etc. Weight 17 lb.

Price: £10/19/5 (plus freight).

"JABEL" TR-14 REAMERS

Ideal for clean finish on small panel holes and cleaning out for neat fit.

Price: 10/6 each.

GRID DIP OSCILLATORS

LEADER LDM-810 Grid-Dip oscillators range 2 to 250 Mcs. using 6CW4 Nuvistor with internal 1 Kc. modulation. Meter 0-500 D.C. microammeter. Operates from 110-250 volt A.C. 50 cycle mains.. Can also be used as absorption wavemeter. AM monitor, neutralising RF stages and checking receiver calibrations, etc.

Price: £22/7/6.

Price: £22/7/6 (inc. S. Tax).

WILLIS AIR-WOUND INDUCTANCES

No.	Diam.	Turns per In.	Length	Equiv.	Price
1-08	½"	8	3"	No. 3002	5/3
1-16	½"	16	3"	No. 3003	5/3
2-08	⅝"	8	3"	No. 3006	6/3
2-16	⅝"	16	3"	No. 3007	6/3
3-08	¾"	8	3"	No. 3010	7/4
3-16	¾"	16	3"	No. 3011	7/4
4-08	1"	8	3"	No. 3014	8/5
4-16	1"	16	3"	No. 3015	8/5
5-08	1¼"	8	4"	No. 3018	10/6
5-16	1¼"	16	4"	No. 3019	10/6
8-10	2"	10	4"	No.3907	13/9

SPECIAL ANTENNA ALL-BAND TUNER INDUCTANCE

(equiv. B. & W. No. 3907-7")

7" length, 2" diam., 10 t.p.i., **24/6**

References: A.R.R.L. Handbook, 1961; "QST," March 1959; "Amateur Radio," Dec. 1959

WORLD GLOBES

"Replogle" World Globes, especially designed for Amateur Stations. World Call Areas clearly marked. Includes day-night time cursor.

Price: £5/17/6 inc. S.T.

Please allow for Freight when Ordering

PENETROX "A"

Famous American aluminium and copper corrosion inhibiter. Avoid bad electrical connections and corroded joints on beam antennae, t.v. antennae, etc. Use—

PENETROX "A"

Price: 10/- per tube

(Post Paid)

CO-AXIAL NOISE SUPPRESSION CONDENSERS

Ducon Type PNC52 0.1 μF., 50v. d.c.w., 20 amps., **8/3 each** inc. S.T.

Ducon Type PNC51 0.1 μF., 50v. d.c.w., 40 amps., **13/6 ea.** inc. S.T.

Highly effective for mobile work.

V.H.F. CO-AX CONNECTORS

(As used widely in "QST" and "CQ" circuits and on disposals equipment)

PL259 Co-ax Plugs **9/9**

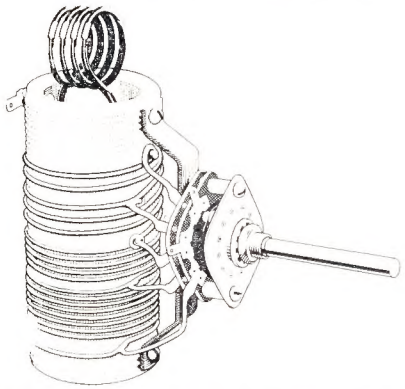
SO239 Co-ax Sockets **9/-**

UG-176-U Adaptors, adapts PL259 Plugs to range of Co-ax Cable diameters **3/3**

C32-14 Co-ax Couplings, couple two PL259 Plugs **17/6**

(Prices include Sales Tax)

PI-COUPLERS



WILLIS MEDIUM POWER TYPE

For use up to 600 watts p.e.p. Match plate loads of 2,000 to 3,500 ohms (Z) and higher into coaxial cable. Operating Q increases on higher frequencies to increase harmonic suppression enabling practical values of tuning capacity to be used on 10 and 15 metres and allowing for wiring inductance (L). Incorporates extra switch section for shunting additional capacity (C) if required, or switching other circuits. Switch rated for 10 amps. at 2,000 volts with contact resistance (R) of 0.8 milli-ohms.

Price: £3/19/6 (inc. S.T.)

WILLIS PI-COUPLER CHOKE

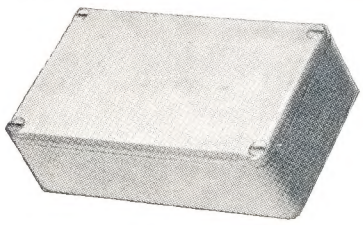
To suit above Pi-Coupler. No resonances within Amateur bands if spaced diameter or more from metal panels. Stands 6 inches high on 1 inch diam. ceramic former. Base mounting bracket included.

Price: 25/- (inc. S.T.)

Willis Bi-filar Filament Chokes

Price: 21/6 inc. S. Tax

EDDYSTONE DIECAST INSTRUMENT BOXES



Cat. No. 896

These virtually water tight die cast boxes are made of zinc alloy material in four sizes. Each box is supplied with a close-fitting flange lid, securely held with countersunk 4 BA screws. Natural finish. These substantial boxes are invaluable for many purposes. Sizes available:—

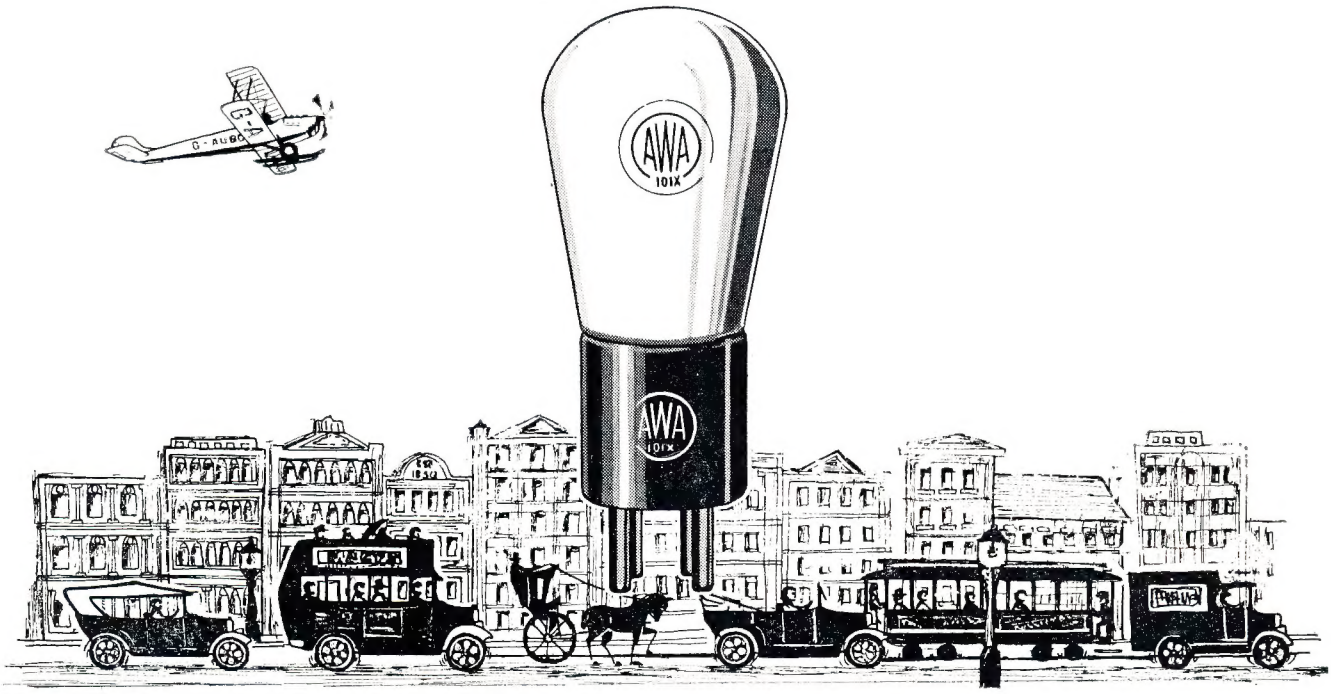
Type 650—4½" x 3½" x 2" .. **£1/7/9**
Type 896—4¼" x 2¼" x 1" .. **19/3**
Type 845—7¼" x 4½" x 2" .. **£2/5/-**
Type 903—7¼" x 4½" x 3" .. **£2/8/6**

(Prices include Sales Tax—Add Freight)

WILLIAM WILLIS & CO. PTY. LTD.

428 ELIZABETH STREET. MELBOURNE, C.1 Phone 34-6539

This Valve made news in 1927



In 1927 New A.W.A. valves types 33, 99X and 101X made headlines.

In 1933 Amalgamated Wireless Valve Co. Pty. Ltd. was formed—an expanding range of A.W.V. Radiotron valves continued to make news.

In 1965 A.W.V. Super Radiotron valves—over 100 different types—are still making headlines.

The long experience behind the A.W.V. brand is the guarantee to engineers and servicemen that the performance and reliability standards they require are met in every respect.

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